User's Manual

Version 5.4x

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Welcome to grandMA 3D

Thank you for placing your trust in this product.
This manual will provide all the necessary information for you to get the best out of your visualization software.
The ‚grandMA 3D'software is subject to continual development. It is therefore possible that the entire information printed in this manual is out-of-date.
Up-to-date information can always be found in the current readme.txt file on the CD or the downloaded program disks.
For the current software version refer to www.malighting.de

We need your help!
If you have wishes or suggestions please send us an e-mail (mailto:support@spectrolight.de) or visit our forum at www.spectrolight.de .

Looking forward for a good cooperation
Your grandMA 3D team

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1 What is grandMA 3D?

The grandMA 3D is a unique new user interface, created for the visualization as well as the design of three dimensional stage layouts to be utilized in conjunction with the grandMA product range.
The software is designed as a pre-programming tool for light designers. It simplifies the process of creating shows to save time and money.
Rendering tools have two major expectations: Maximum speed and good rendering quality.
The major focus of grandMA 3D is real-time visualization to get an impression of what will happen on stage.

grandMA 3D allows a set up of any custom stage or scenery layout with 2D drawing facilities and a library of basic graphical elements. Multiple windows with front/side/top view can be opened and updated at the same time. All the stage elements can be positioned in x/y/z directions and may also be rotated around the various axes. Custom textures for the surface of these elements can be imported in a bitmap format or may be chosen from a library.
The set up of lanterns, luminaries or moving lights can be simply retrieved from the grandMA console's show file per electronic transfer. There is no need to set DMX lines, DMX addresses or operation modes for the single fixtures, as these details are already pre-adjusted in the grandMA. Once the transfer takes place the user just has to position these fixtures in the 3D environment of the grandMA 3D software. The user may also group them logically on bars, scenery elements or trussing.

When switching to 3D rendering mode, the grandMA 3D software becomes an extremely powerful visualizer with real time rendering facilities. All drawing elements, fixtures and lanterns are shown with surface textures, as a kind of virtual reality. All functions of the installed lights are remotely controlled by a connected grandMA and displayed with realistic movements, colors and images. At the same time the viewing angle can be changed by just moving the virtual camera around with full control of zoom, position and rotation. Or just switch to another pre-defined camera position and start a new movement from there.
All optical fixture parameters, like beam angle, color (even color mixing) and gobos can be displayed. Custom gobos can be inserted by simply assigning a color bitmap file to the gobo position of the related fixture.

With the use of special graphic cards supporting shutter glasses, the grandMA 3D software enables an even more realistic display of movements, by moving the “virtually” audience in the middle of the scenery. The full processing power of this new add-on software can be discovered in this real 3D-mode whereas as the user wears electronic shutter glasses to give him/her a vivid holographic view of his/her lighting design.

All the show data can later be received "online" from the grandMA and displayed in real time rendering. It may also be recorded live and converted into one of the standard video compression formats. These files can be easily viewed on any personal computer or MAC with standard media player software and may even be sent by e-mail.

1.1 Program Features

This new generation of visualization software comes with its own 3D engine and is based on the Microsoft DirectX® standard for best performance. It communicates directly with the grandMA via Ethernet and in this way it even receives the show ´s configuration and patching. No external interfaces or components are required – not even a dongle needs to be installed. The grandMA 3D Version is tailored for use with the new software in conjunction with the grandMA console range and the grandMA on PC software.
The internal structure of grandMA 3D is strictly object oriented and allows the definition of a group of elements for easy set up and design. A truss bar with connected fixtures can then be moved, rotated and repositioned in one go.

Although the grandMA 3D software runs on an external PC or notebook computer, it shares all databases and fixture libraries with the connected grandMA console. During offline applications, the software may even be used with the grandMA Off-line software, with both software programs running on the same PC. Both software packages, grandMA 3D, as well as the grandMA Off-line software, are available for free, via download on the Internet.

1.2 Technical Features

- Real-time visualization engine for all major features of lanterns and moving lights
- Followspot mode for movinglights in real-time
- Direct transfer of libraries, fixtures, patches and DMX address settings of the grandMA via Ethernet
- Live control of all fixtures via virtual DMX lines on a grandMA 3D Ethernet protocol
- Transfer of all grandMA 3D set ups for fixtures and dimmer to the grandMA's hard disk
- Built-in graphical editor for the design of basic stage layouts and scenery elements
- Extensive objects library with free upgrades via download from the Internet
- Recording of shows and show features, video compression standards "live"
- Complete offline creation of shows in conjunction with the grandMA Off-line software running on the same PC
- Undo, redo buttons
- Video machine for playing videos with grandMA 3D
- Visualization of fixture types
- Realistic fog
- Alignment manager for easy positioning of objects
- Dynamic moving pathes allow programmed camera movements
- Automatic download of all relevant fixture data of the current show (including gobos, color gels, and rigging coordinates)
- New fixture type editor
- Colour gel library for dimmers and fixtures
- Multilayer technology for objects, fixture etc.
- Own 3D library with objects like people, instruments etc.
- Direct import of the following file formats possible (also using drag and drop) – 3DS, dxf (3D only), jpg, bmp, gif, tif, pgm, ppm, tga, pcx, psd, eps. The import is realized using an „open plug-in“ import structure.
- Data monitoring for one or more fixtures
- Selectable data formats: Percent, 8 bit (DMX) or 16 bit (DMX)
- Automatic creation of multiple default cameras
- Additional data views: Grid mode (dependent on active layer)
- Objects can be controlled from the console and „moving paths“ can be assigned allowing console control of truss movement or other objects
- Sound file (.WAV) can be executed during show playback allowing demo shows with synchronized music
- Fog can be controlled via the desk
- Fixture Type plausibility function
- Fixtures can be controlled via the ‘Channel Test Dialog’

- Fixture Library and Setup Support makes it possible to build a complete Setup
- Visualization of two rotating gobo wheels
- 3D Visualization Quality Manager
- LED Fixture support

1.3 New Features in V 5.4

- Performance optimized + bug fixing
- Truss library revised
- Video creation via wizard
- Plausibility & Structure check
- Working with grandMA „Worlds“
- Properties „Angle“ and „Intensity“ for every dimmer individual
- …

2 System requirements

- IBM® compatible PC or notebook with 800 MHz processor with at least 64 MByte RAM
- Ethernet card with 10/100 B-T/TX connector and TCP/IP protocol enabled
- Highspeed 3D graphics card with hardware acceleration with at least 32 MByte video memory in high color mode with 16bit color depth enabled
- 1024x768 pixel resolution or above
- 50 MByte available disk space on hard disk
- Microsoft Windows® 2000 or Windows® XP operation system
- Microsoft DirectX® version 7 or above
- grandMA console software 5.4x or grandMA Off-line 5.4x

3 Installation

The installation is divided into three parts:
- Installation of the PC-program
- Connection with the grandMA, grandMA light or grandMA ultra light
- Connection with the grandMA off-line editor

3.1 Version of grandMA desk or grandMA Off-line

You can determine by means of the version number of grandMA 3D if the software version of the visualizer fits to the software version of the desk or off-line.

Version X.X
X.X represents the version number of the desk software.
This number should correspond to the desk- or off-line software version !

The grandMA Off-line software can run on the same PC or on an external PC connected via Ethernet.

3.2 Program Installation

The software is available on a CD-ROM or it can be downloaded from the Internet.
Internet downloads:
Please extract the downloaded file into a temporary folder and run the setup.exe program.
CD version:
The installation program should start automatically after inserting the ‚grandMA 3D' CD.
If not, you can run the setup.exe program from the root directory.
Note:
You should have administration rights on the machine to install the program.
Before you install a new version of the program, please be sure that you have un-installed any old versions! You must un-install the application from the control panel under 'add/remove programs'. It's not sufficient to just delete the files.

3.3 IP Addresses

IP addresses are what allow the internet and most modern networks to work. It's a way of identifying a computer by a unique set of numbers (an IP address). An IP address is made up of a set of four numbers. Each number can have a value between 0 and 255.
Your PC and the grandMA must have their respective IP addresses set up correctly.
The first three sets of numbers must be the same and the last set must be different.
For example:
GrandMA console IP address: 192.168.0.5
PC with grandMA 3D IP address: 192.168.0.10

To setup the IP address of the desk, please refer to the grandMA user's manual.

3.3.1 How to set the IP Address of the PC

Please note if you are already part of a network please check with your network administrator before changing your IP settings (you may not need to!) and before connecting any device, such as a the lighting console, to an existing network.

Windows® 2000

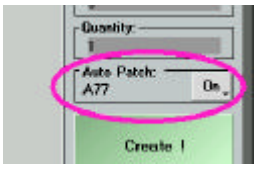
- START – SETTINGS -NETWORK & DIAL-UP CONNECTIONS
- Double click on LOCAL AREA CONNECTION
- Click on PROPERTIES
- Select INTERNET PROTOCOL (TCP/IP) from the list of protocols.
- Click on PROPERTIES
  In the properties window you will see either your existing IP address or a selection that says OBTAIN AN IP ADDRESS AUTOMATICALLY.
  In the case of the latter,
- click on the radial button USE FOLLOWING IP ADDRESS.
- Click OK once you have entered your required IP address.
  This may prompt an error box to appear telling you that a SUBNET MASK is required, however, when you click “OK” you should see a default SUBNET MASK has already been input and you can just click OK to leave it.

Windows® XP

- START – CONTROL PANEL – NETWORK CONNECTIONS
- Double click on LOCAL AREA CONNECTION
- Select INTERNET PROTOCOL (TCP/IP) from the list of protocols.
- Click on PROPERTIES
  In the properties window you will see either your existing IP address or a selection that says OBTAIN AN IP ADDRESS AUTOMATICALLY.
  In the case of the latter
- click on the radial button USE FOLLOWING IP ADDRESS.
- Click OK once you have entered your required IP address.
  This may prompt an error box to appear telling you that a SUBNET MASK is required, however, when you click “OK” you should see a default SUBNET MASK (255.255.255.0) has already been input and you can just click OK to leave it.

4 Communication with the grandMA Desk Series

Notice that the DMX channels have to be ‚patched' to visualize the spotlights with grandMA 3D.

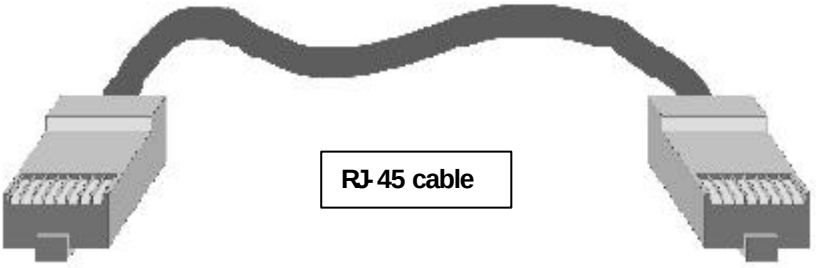


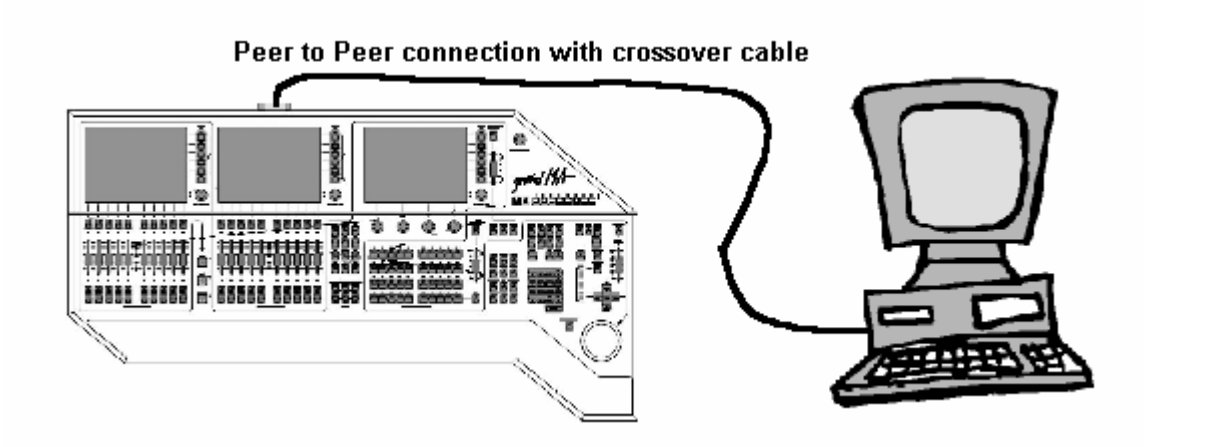
The simplest way of ‚patching' is to set the switch ‚Auto Patch' in the dialog ‚Create New Fixtures or Channels' to ‚On' at the desk or the Offline.

4.1 Connection with the grandMA desk

Please make sure, that the program version of the grandMA desk meets the specifications described in: *3.1 Version of grandMA desk or grandMA Off-line .*

For communication you have to connect the PC with the grand MA console or another PC running the off-line editor.
You can do this directly with a patch crossover cable with two RJ-45 connectors.





If you use a network with a hub or a switch, connect the PC with a regular patch network cable to the hub or switch.

- Connect the cable to the desk.
- Start the desk and load a show
- Start a new session at the desk (MA Network Connections 'Start New Session')
- Start the grandMA 3D application with 'New document'

The application automatically connects to the desk and receives the data of the current show.
The received show will be visualized.
If you do not get a connection to the desk, make sure that grandMA 3D is connected as slave as described in '5 Data management '.

4.2 Connection with the grandMA Off-line software

Please make sure, that the program version of the grandMA Off-line software meets the specifications described in: *3.1 Version of grandMA desk or grandMA Off-line .*
Both applications, grandMA 3D and the grandMA Off-line can work on the same PC or you can use two PC's connected via Ethernet.

- Start the grandMA Off-line and load a show
- Start a new session at the grandMA Off-line (MA Network Connections 'Start New Session')
- Start the grandMA 3D application with 'New document' in the wizard mode.

grandMA 3D searches for a running grandMA Off-line. if grandMA Off-line is found grandMA 3D connects automatically with grandMA Off-line and loads the current show.

If you do not get a connection to the desk, make sure that grandMA 3D is connected as slave as described in '5 Data management '.

5 Data management

This section describes how data is managed by the desk and the visualizer.
The visualizer is a free programming tool allowing light designers to create shows comfortably.
Desk and visualizer software can work independently.

Master / Slave:

If the console and visualizer are connected you can determine, via the connection dialog, whether the application runs in master or slave mode. The master, usually the console, holds the current show and fixture data. It follows that any confirmed modification of a fixture in grandMA3D will also be updated in the console.

5.1 Desk Connection Dialog

When you launch grandMA 3D it will automatically try to make a connection with the grandMA console or the Offline.
The four possible states of the connection are indicated by the button in the toolbar:

The LED is grey.
No connection exists.

The LED is red.
At least one Session was found on the Network. GrandMA 3D is not member of a session.
Maybe that the „Allot invite" switch is not set.

The LED is Green wit an 'S'.
GrandMA 3D has joined a session as slave -

The LED appears blue wit an ‚M'.
GrandMA 3D has the Master function of a session.
The creation of a session with grandMA 3D can be used to transfer all data of an .sl_ file (grandMA 3D format) to a desk or offline. If the loading is completed, the desk automatic becomes the master and grandMA 3D gets the slave.

ATTENTION: With the start of a new session (Create) the session founder overwrites all data of the other members. I.e. if a new session is founded by the grandMA 3D all data in the desk will be overwritten!

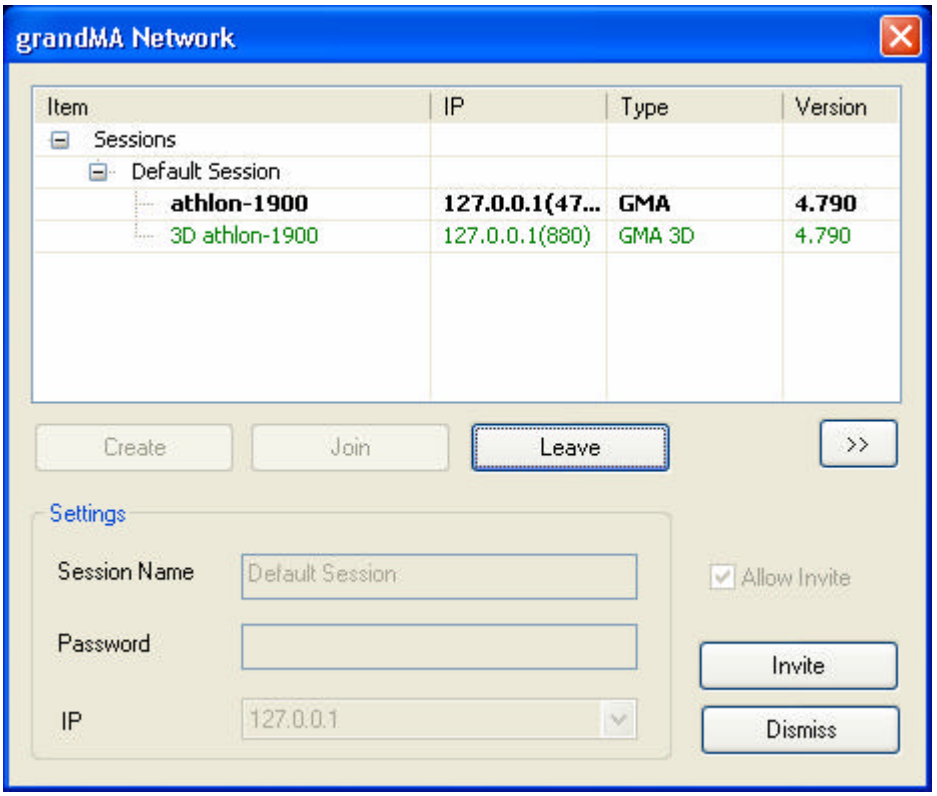
If more than one console, visualizer or offline editor are connected to the network the connections to the equipment will have to be properly assigned.

- The communication between consoles, visualizer and off-line editors takes place in sessions.

- A session has only *one* founder. This is e.g. the master. On connection the founder transfers its data (fixture types) to the slaves.
  From then on, all session members are synchronized and have equal rights. If a fixture is edited in the slave the change is reflected in the master and vice-versa.

- Devices not assigned to any session are not in the list.
  If you press the 'Invite' Button you get a list of these MA devices.

The network configuration can be managed by the ‚Desk Connection' dialog:



With the **'>>'** button you can expand the dialog.

The upper part of the dialog shows the active sessions and their members in a tree view.
The session master is printed bold.
GrandMA 3D is printed green.

Create (a new session):
GrandMA 3D creates a new session as master. This function is used for example if a show exists as .sl-file (grandMA 3D Format). The show with all data is sent to the slave. It must not be loaded via disk to the desk. If the loading is completed, the desk automatic becomes the master and grandMA 3D gets the slave.

Join (Session):
Join the selected session as a member (usually as slave).
After that data of the desk is transferred to the grandMA 3D.

Leave (Session):
Leave the session.

>>:
Expands the dialog view.

Settings:
Session Name:
Input or display for the name of a session.

Password:
If a password is required for the session you can enter it in this field.

IP:
Use this listbox to choose an IP address for network communication. If there is more than one IP available (e.g. multiple network cards installed) select the IP address which is linked to the grandMA desk.

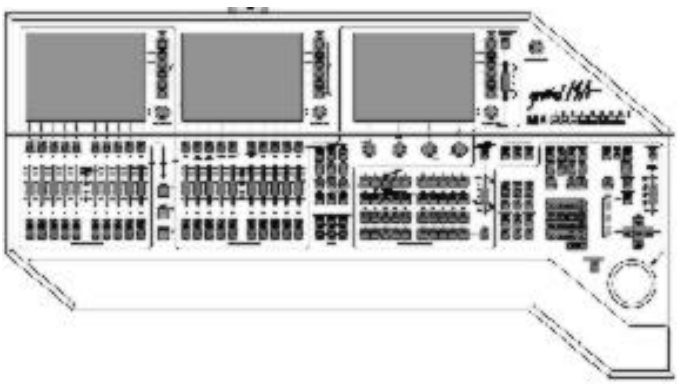
Allow Invite:
If the switch is on, grandMA 3D can be invited to a session.

Invite:
Opens a dialog that shows all connected MA members (desks and off-line) of the network.
You can invite new members via the dialog.

Dismiss:
The member of the session has to leave the session.

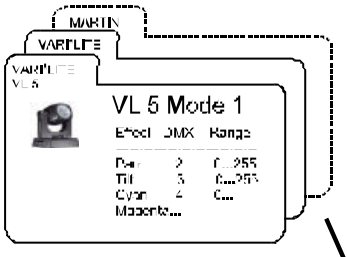
The following pattern demonstrates how the Scan types (Fixture types) library is managed by the desk and the 3D visualizer.
In this example the grandMA desk is the Master and the grandMA 3D is the Slave.
When the application is connected to the desk, it receives all scan types included in the actual show.
The included scan type data is taken from grandMA 3D and shown in its 'Data Base'.
These Fixture Types can be edited with grandMA 3D and the changed properties are immediately taken up by the desk.

Data Management grandMA desk

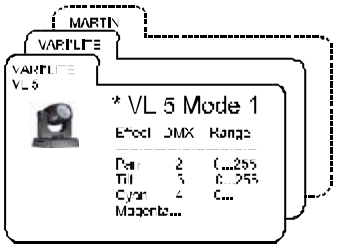


network to
grandMA 3D

Fixture types

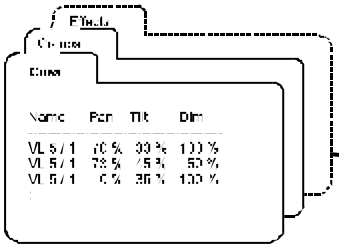


Fixtures (in current show)



The resuling show contains copies of the fixture types from the manufacturer- and the user libraries..

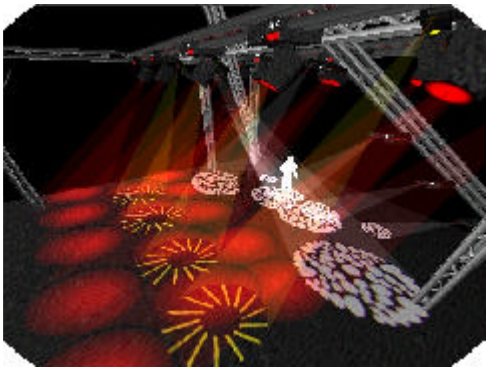
Show data



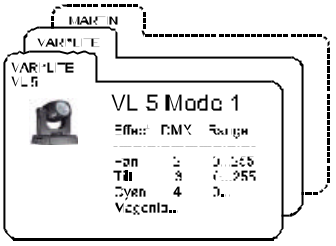
my
presentation
grandMA desk

Data Management grandMA3D

network to grandMA



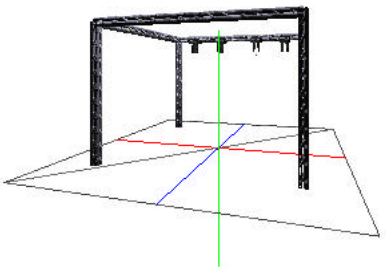
Fixtures of current show



Stage objects

The resuling stage contains copies of fixture types from fixture libraries and copies of all stage objects.

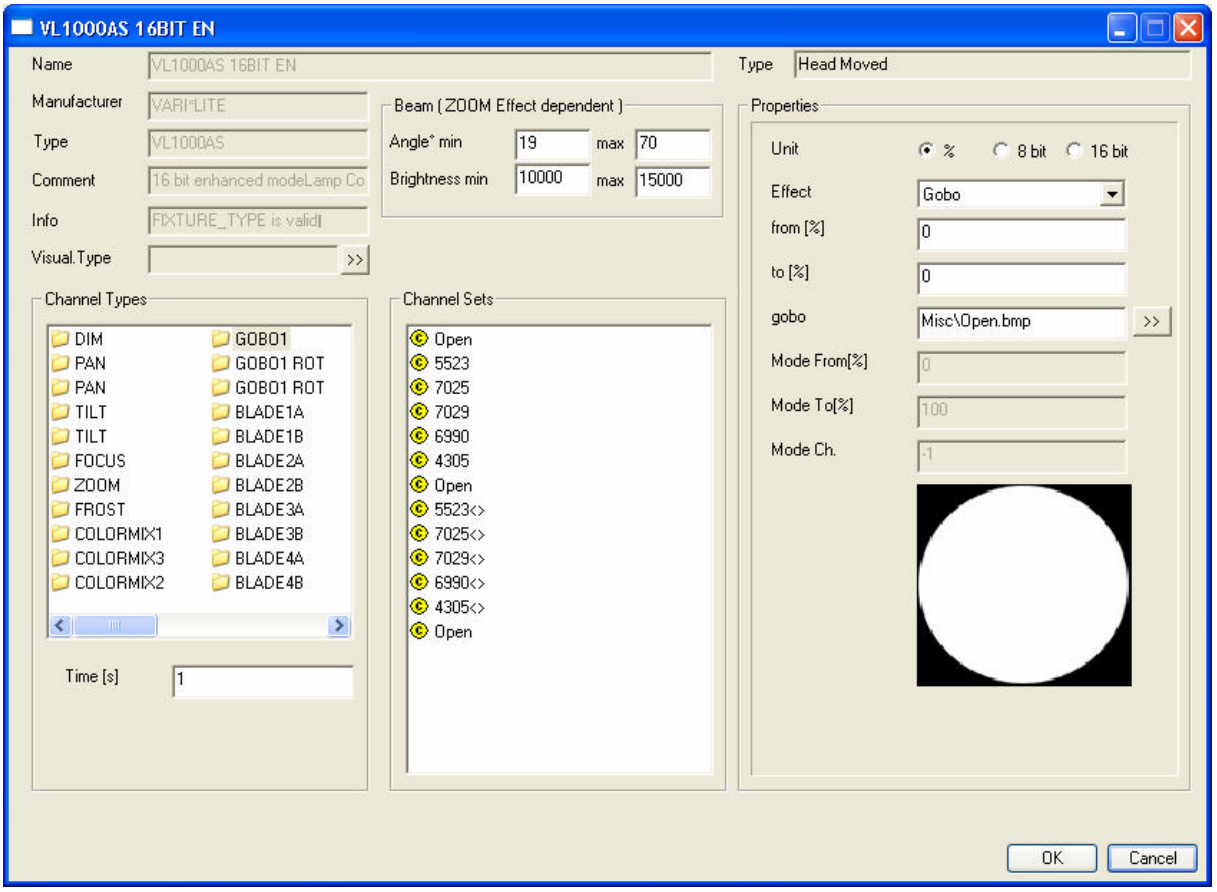
Coordinates (X,Y,Z)



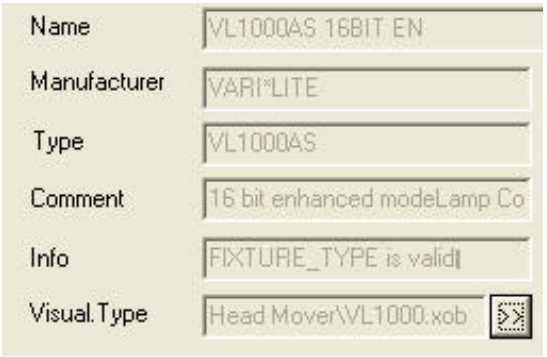
my presentation grandMA 3D (.SL_ file)

5.2 Modifying Fixtures

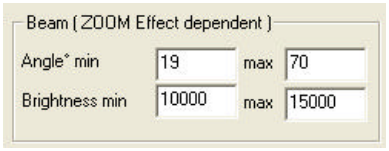
You can modify the connected fixture data e.g.: change the gobos or use other DMX settings.
The modified properties of the fixtures are valid for the fixtures included in the show. The original data of the fixture library are kept.
To modify a fixture type right click with your mouse on the selected fixture in the 2D or 3D view or select the fixture in the object manager and click on 'Edit Fixture Type'.
The following dialog appears:



The top of the dialog shows: Name, manufacturer, fixture type and comments.
This data is provided by the desk database.



Name:
Designated fixture name
e.g. VL 1000 AS 16 Bit
Manufacturer:
The Manufacturer e.g. VARI*LITE
Type:
The type e.g. VL 1000
Comment:
Any comments e.g. „with gobos advertising"
Info: Info fields
Visual. Type: Visualization in the 3D window



Angle: Beam angle in degrees from…to

Brightness: in the zoom range from…to
(the brightness varies in dependence of the zoom)

Type:
Head- or mirror moved fixture or a dimmer

The fixture or dimmer properties are listed at the bottom of the dialog.
These properties are described in a similar way to the console using three hierarchical stages:

Channel Types
Channel Sets und
Properties (Channel Values)

Channel Types:

A channel Type is a physical image of the DMX channels. It corresponds with a fixture effect e.g. color. In addition to this it can contain split effects on this channel e.g. 0…50% dimmer and 51…100% strobe.
The allocation of a channel type is described in the associated channel set.
If a channel is represented more than once, e.g. pan, pan (for 16 Bit Pan), the first entry describes the channel type properties.

Channel Sets:
The Channel set describes the different channel type intervals.
For example: Channel Type = Colour, Channel Set White = 0…15 %, Channel Set Red = 16…31% etc.
Additional channel sets can be added using the right mouse button context menu. You can write anything you want in the description text e.g. “Gobo 1”
If there is a gap in the description of the channel set, the values of channel set color and gobo are interpolated. You can switch of the interpolation via the menu entry ‘Options – switches’.

Special case:
Mode Channels
With some fixture types the channel effect depends on the control channel.
For example:
For the Gobo channel a certain value (50%) will be selected for Gobo 1.
If the mode channel is now activated, the Gobo position changes into a rotation (e.g. with some ‘High-End’ models)

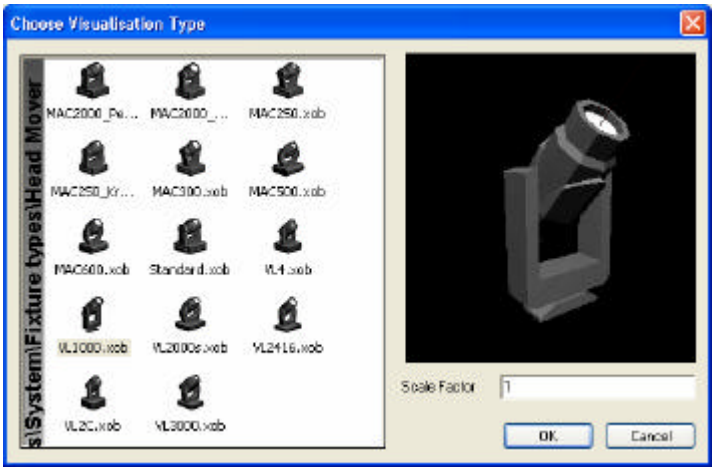
Properties:
This describes the channel set properties.
Units: Units can be displayed in percent %, as 8 bit or 16 bit values.
Effect: In this list box you can choose how the effect will be visualized.
from: (exists for every effect) smallest value
to: (exists for every effect) largest value
The selected properties are dependent on the chosen effects.

Mode channels indicate a valid effect range if the mode channel is valid (Mode Ch != -1)
Mode From: Mode to: Mode Ch.:

After confirming the changes with the “OK” button the changed console values will be transferred to the database.

5.2.1 Fixture Type Visualization

There are several 3D models of fixtures available inside the library.
If there is a model for the fixture type, this model is used. If not, the standard model is taken for the visualization.
For changing the visualization type open the dialog via ‚Edit Fixture Type’ -> ‚Visual. Type’ and choose another model:



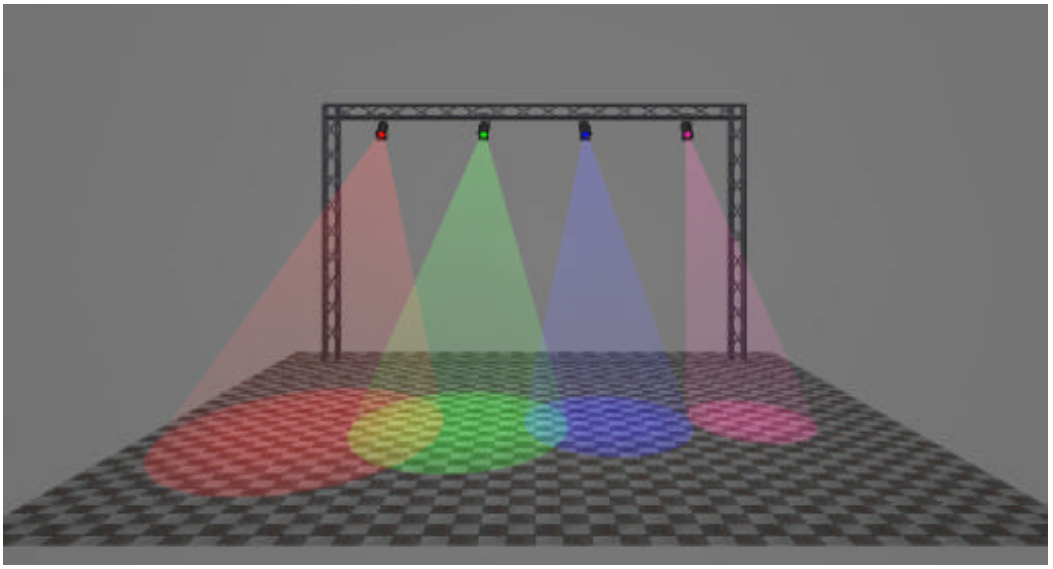
The selected fixture model is presented in a 3D-view.
The size of the 3D model can be scaled to adjust it to the expected size.
If your fixture is not present in the data base, choose a similar model and adjust the size with the scale factor.

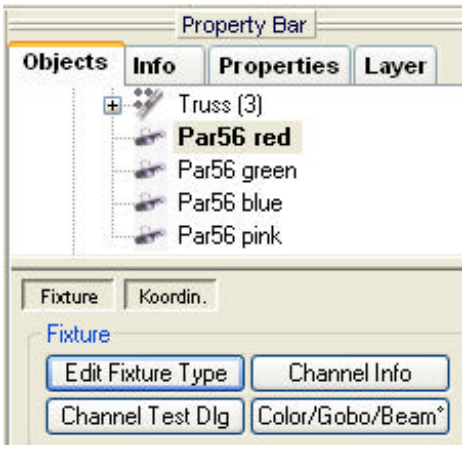
5.3 Assignment of properties to dimmer channels

The following properties can be assigned to dimmer channels:

- Color (RGB value or Color Filter from manufacturer library
- Gobo (Image on the illuminated surface)
- Beam angle
- Intensity

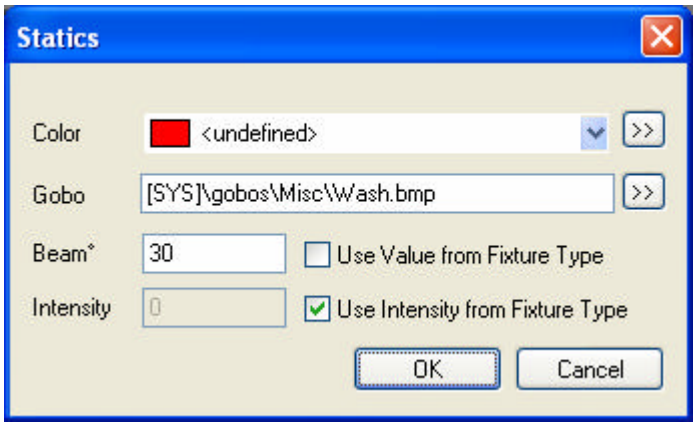
So you have the possibility to assemble your spots for example with different color gels and lamp types in spite of the fact that all have the same fixture type:





In this example you can see 4 PAR spots on one bar with different emitting angles and colors all of the type ‘Dimmer’.

To assign a color, an emitting angle, the intensity or a gobo select the dimmer in the Object Bar and press the ‚Color/Gobo/Beam’ Button.



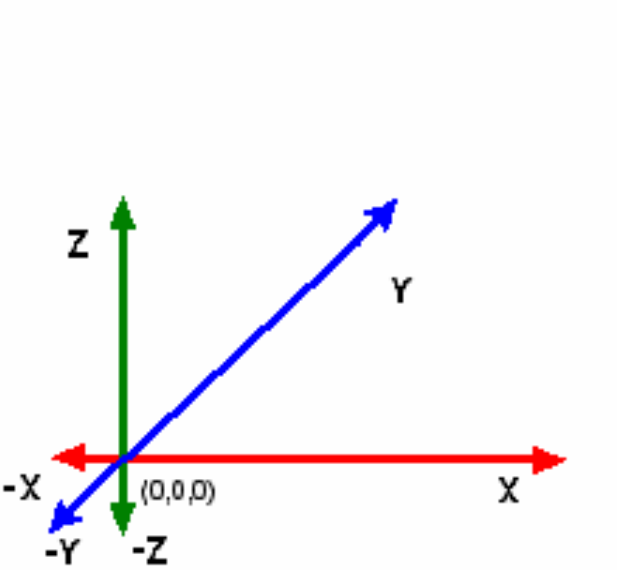
In the appearing dialog you can choose a color, a gobo (any bitmap), an angle and the intensity for every spot individually.

5.4 Creating new Fixture Types

In the current version creation of new, additional fixture types is only possible with the grandMA desk.

6 3D Geometry System

GrandMA 3D geometric system lets you define and manipulate objects in 3D space.
It features a geometric system architecture that defines the x-y plane as the ground area with the height as z –axis:



For a better orientation axes are marked with colors:

---- red	**X-axis**
---- blue	**Y-axis**
---- green	**Z-axis**

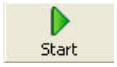
7 Quick Guide

This capture gives a brief description how to operate with the grandMA 3D.
For the following steps a grandMA desk or the grandMA off-line should be connected. Without the connected desk, or off-line editor, you are able to create a stage but because the fixture data comes from the desk there will be no fixtures available.
We shall build a simple stage with the following settings:
- a square area of 10 * 20 meters with a rigging height of 5 meters,
- the rear trusses will be fitted with moving spotlights,
- and the lights are to be switched on.

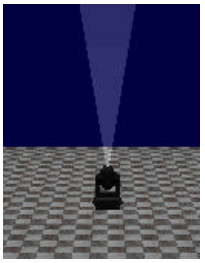
7.1 Step 1 – Insert Fixtures

- Start the connected desk or off-line with an empty show.
  (Backup; Load Show; New Show)
- At: ‚Tools' ‚MA Network' you should see a session named ‚Default Session'. If not, start a new session with 'Start New Session'.
- Insert 4 fixtures into the show.
  (‚Setup', ‚Full Access','Fixture Layer, New','Create New Fixtures or Channels', ‚From Library, for instance VL1000', ‚Quantity = 4', **‚Auto Patch = on'**,'Create')
- Select the 4 fixtures and switch the dimmer ‚on'.
- Then start grandMA 3D with ‚New Document'.

The desk will be recognized and grandMA 3D will be connected as slave.
The active connection as 'slave' is signaled by a green LED 'S'.

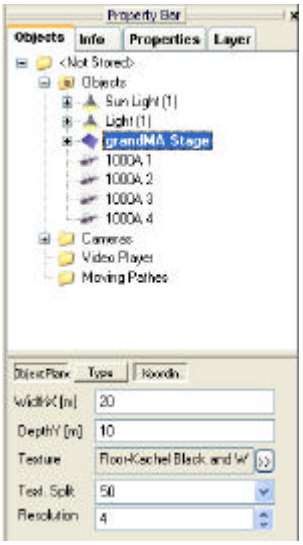


Switch to the Play Mode.



At the 3D View the inserted fixtures are displayed.
All fixtures are set to the origin with the coordinates (0,0,0) on the ground an the beams show up into the sky:

Switch back to the Stop mode to position the fixtures.



With the menu entry ‚View - Property Bar' switch on the object tree.

Here the 4 inserted fixtures are shown.

The size of the stage also has been received from the desk (GrandMA Stage WidthX, DepthY).

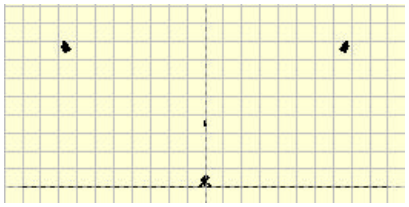
If you change the size the new size is send to the desk.

All other data like textures etc. is hold by grandMA 3D.

7.2 Step 2 – Inserting trusses

Trusses can be inserted from the library as predefined elements via drag and drop into the 2D- or 3D View or they can be created dynamic at the 2D View.
In this example we will create dynamic trusses:

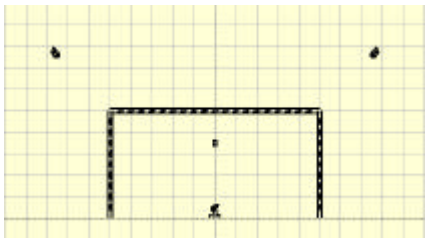
- Switch to the 2D View .
- Set the grid to 1 m (‚Properties – Grid' at the 'Property Bar').
- With a right mouse click into the 2D View change to the ‚Front' view:



- You will see the 'Front' view of the stage with a 1 m grid.

- For the Y-coordinate that is not displayed in the view enter 4 m. The y-coordinate for the inserted trusses will be assigned to 4 m.

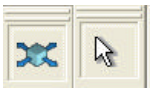
- Select the 4-pipe truss in the ‚2D Toolbar'.



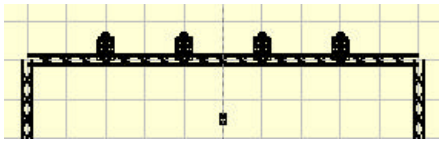
- Now you can draw trusses holding down the left mouse button in the 2D view. These trusses are generated at runtime.

This way you can draw all trusses for the frame.

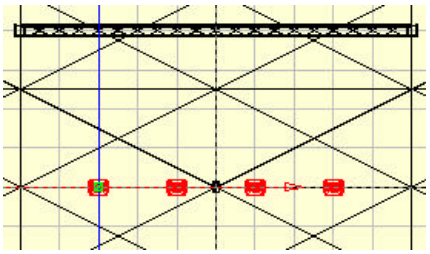
7.3 Step 3 – Positioning of Fixtures



- Select the ‘Select’ button in the 3D toolbar.



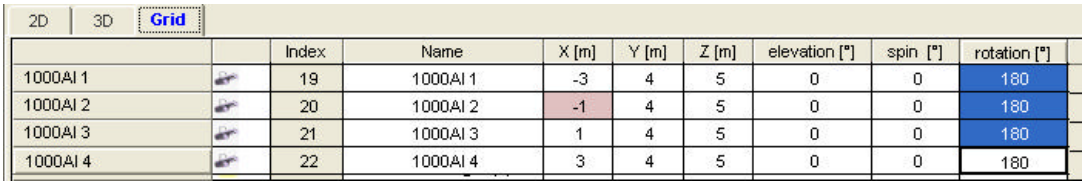
- Select a fixture with a left mouse click and move it under the truss while holding down the mouse button down.



- Switch to the ‚Top’ view with the context menu of the right mouse button.
- Hold the ‚Ctrl-button’ pressed and select all 4 fixtures with the left mouse button. Now you can move all selected fixtures on the truss.

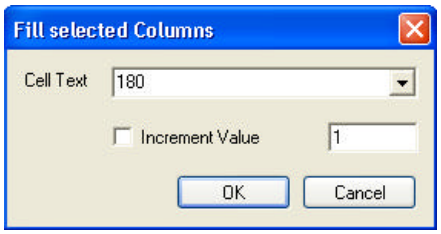
The fixtures are shining up and have to be turned down 180°.
This can be done separately for every fixture via the properties or for all together in the property grid.

- Switch to the grid view

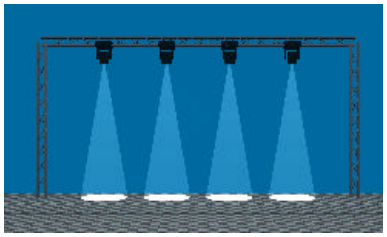


		Index	Name	X [m]	Y [m]	Z [m]	elevation [°]	spin [°]	rotation [°]
1000Al 1		19	1000Al 1	-3	4	5	0	0	180
1000Al 2		20	1000Al 2	-1	4	5	0	0	180
1000Al 3		21	1000Al 3	1	4	5	0	0	180
1000Al 4		22	1000Al 4	3	4	5	0	0	180

- Select the column ‚rotation’ by clicking with left mouse button.
- Click with the right mouse button the selected entry and choose ‚Fill selected Colums’

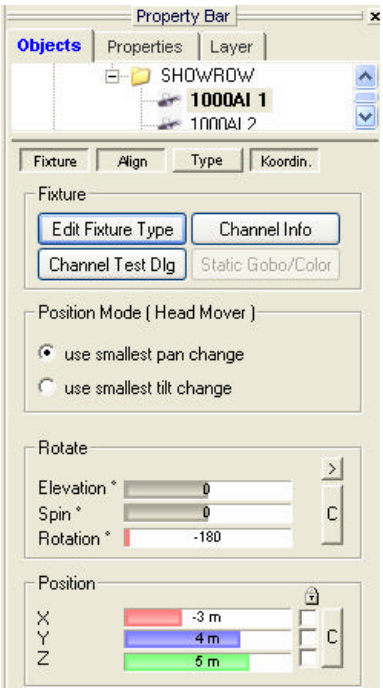


- Enter 180 in the ‘Cell Text’.
  After closing the dialog all fixtures are rotated by 180° and look on the bottom.



- After pressing the ‚Play’ button the result in the 3D view should look like this.

Changing the settings:



If you want to change the fixture settings, select one of the fixtures in the 3D view or in the object manager.

You can also click on the fixture in 2D or 3D view using the left mouse button and then call up the context menu with the right button to edit say for example the fixture type.
The appropriate object will be selected in the object manager and the settings can be changed using the controls below.
Say you wanted a rotation of 180° around the X-axis you can enter the value using the keyboard, or move the slider value by using shifting the mouse while keeping the mouse button pressed or you can use the mouse scroll wheel.
The changes can be seen online in the 2D and 3D views.
The changed settings are sent directly to the console.

Hint:
If you can't see the right gobos or you are discontent with other settings please edit the fixture type as described in ‚5.2 Modifying Fixtures'.

Note:
This example is part of the installation. You can find it in the menu under 'File Open' > 'Manual Example.sl_'

8 Program surface

Positioning of the windows has been revised:

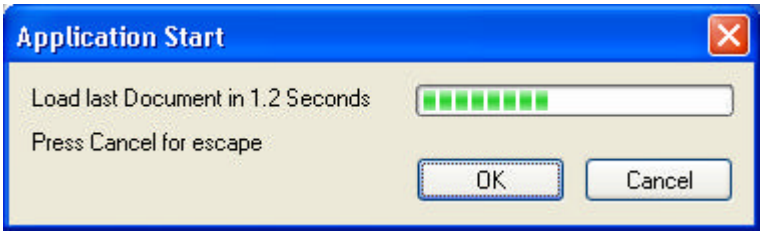
All windows can be presented in a register view where you can switch between the windows with the tabs above

or the windows are presented like multi document windows and can be arranged in the way you prefer.

This mode is especially useful with a second monitor.
During editing in the 2D-View on the first monitor you can watch the result on the second monitor in the 3D-View.

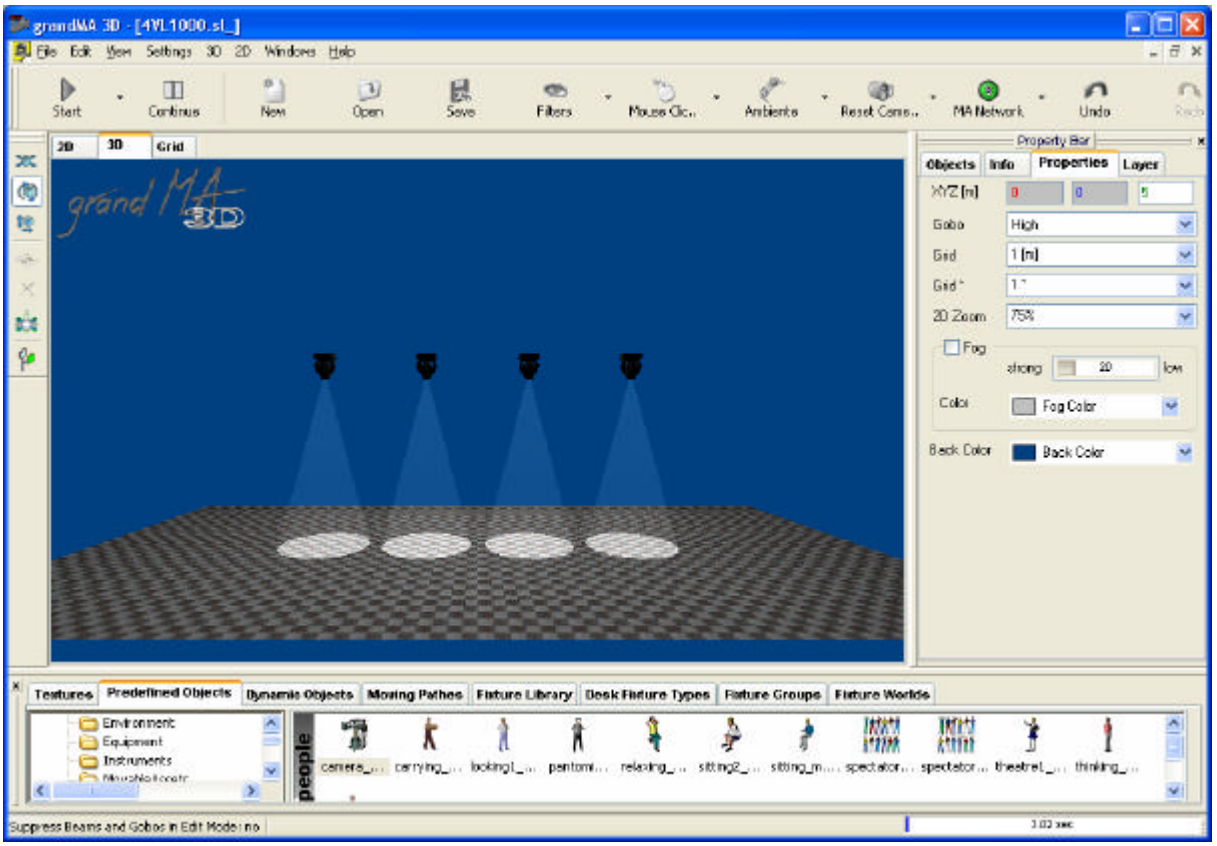
The views can be switched via the menu entry “Windows - Full Screen; Tabbed; Floating“ .
The „Wizard Mode“ became obsolete with the new functionality.

After starting the program, the following dialog will appear on the screen:



Automatic the last used document will be opened or if you cancel a new empty document is created.

A new document with a blank stage appears.
(In this example the Offline is connected with four fixtures)
The surface should look like this:

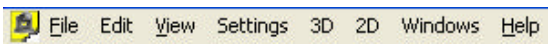


If the application looks different, you can switch on the missing views in the menu bar under 'View' plus the window name. Under the menu entry 'Windows' + 'Tabbed' you can arrange the views on the screen.

As already seen in other applications, the program surface is divided into several parts:

Menu bar Toolbar	
Frame for 2D – and 3D views	Property Bar with Object Manager
Data Bases	
Status Bar	

8.1 Menu bar



Like in several other Windows application you can store and recall files, and adjust the settings of the program:

8.1.1 File...

New: Create a new, empty stage file

Open…: Open a stored stage file (.sl_). Files created with previous versions (<V2.0) have the extension .sld. They also can be loaded.

Print…: Printout a protocols or patch lists.

Create Avi…: Opens a dialog to create an .avi file (Video). See also chapter Video Creation.

Import…: Opens a dialog for importing objects. The following file formats are supported: 3DS, dxf (3D only), jpg, bmp, gif, tif, pgm, ppm, tga, pcx, psd, eps

Save: Save the current stage file under the given name shown in the title.

Save as…: Save the current stage file with a new name.

Recent file list: These menu entries represent a list of the files edited previously. A mouse click in that list opens the file.

Exit: Leave the application.

8.1.2 Edit...

Cut: Cut the selected object and copy it to the Windows clipboard.

Copy: Copy the selected object to the clipboard.

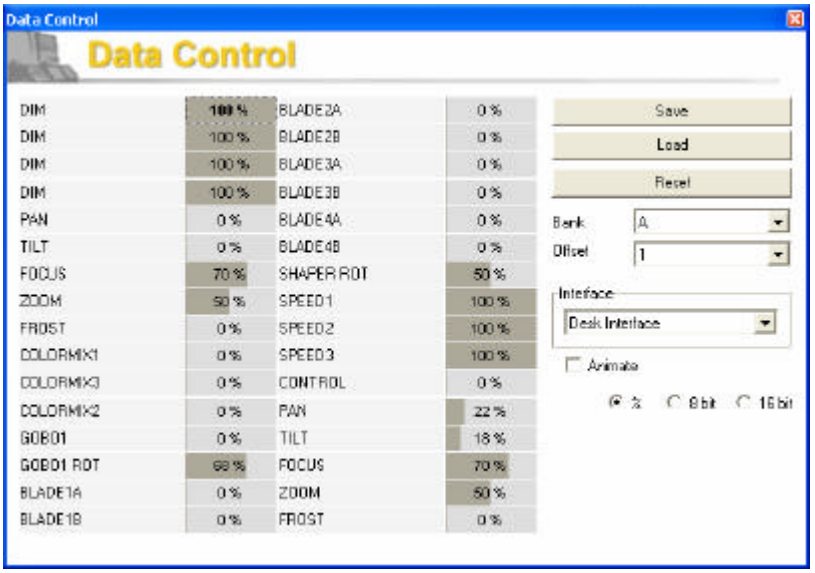
Paste: Paste the contents of the clipboard into the current scene.

Undo: Undo the last action; multiple undo is possible.

Redo: Cancel the 'Undo' action.

8.1.3 View...

Data Control: Opens a dialog to display the data received from the console. This dialog is not modal i.e. when open the changed settings are used and the results (movements etc.) can be seen immediately in the 3D view. If the ‚Start' button is not pressed or no console is connected data can also be simulated using the sliders. GrandMA 3D will show the changes in the 3D view.


Data Control
Data Control
DIM 100 % BLADE2A 0 %
DIM 100 % BLADE2B 0 %
DIM 100 % BLADE3A 0 %
DIM 100 % BLADE3B 0 %
PAN 0 % BLADE4A 0 %
TILT 0 % BLADE4B 0 %
FOCUS 70 % SHAPER ROT 50 %
ZOOM 50 % SPEED1 100 %
FROST 0 % SPEED2 100 %
COLORMIX1 0 % SPEED3 100 %
COLORMIX3 0 % CONTROL 0 %
COLORMIX2 0 % PAN 22 %
GOBO1 0 % TILT 18 %
GOBO1 ROT 68 % FOCUS 70 %
BLADE1A 0 % ZOOM 50 %
BLADE1B 0 % FROST 0 %
Save
Load
Reset
Bank A
Offset 1
Interface
Desk Interface
Animate
8 bit
16 bit

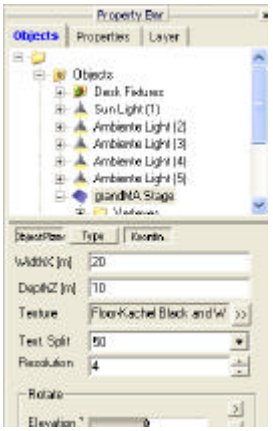
Status Bar: Switches the Status Bar at the bottom on/off

Standard Bar: Switches the Standard Bar on / off.

File Browser: Switches the file browser on / off.

Data Bases: Switches the data bases on / off.

Property Bar: Switches the 'Property Bar' on / off.



Preview Window: Opens a ‚Preview Window' that shows the selected object.

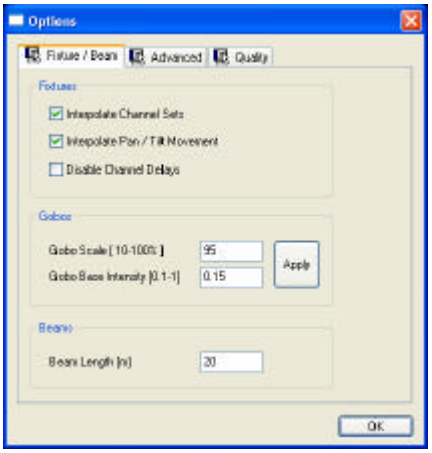
Video Creation: Opens a dialog to create a video file in AVI compatible format (see 9 Video Creation).

8.1.4 Settings...

Select 3D Driver:... Change the Direct 3D driver for graphical output (for advanced users!)

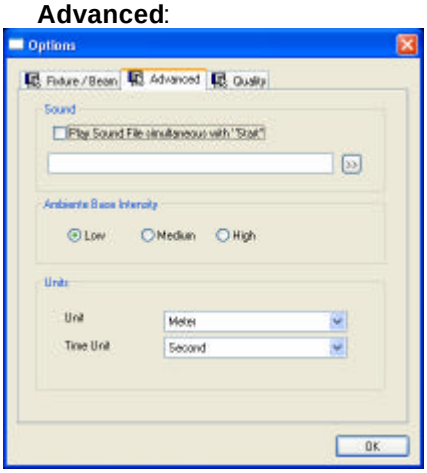
Options... Opens a dialog with the following options:

Fixture / Beam:



Interpolate Channel Sets:
Channel set values will be interpolated.
Interpolate Pan/Tilt Movement:
Due to the Pan/Tilt delay, you will get a different move distance for the way out and the return when moving between two points. This effect can be reduced by interpolation.
Disable Channel Delays:
Switches off channel delays.
Gobo Scale: The size of the **g**obos can be adjusted to the beam via scaling.
Gobo Base Intensity: Setting of the base intensity for the gobo projection.
Beam Length: For a more realistic visualization of the beam it is cut after this length..

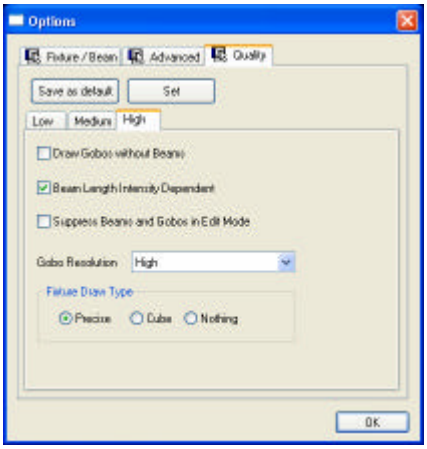
Advanced:



Play Sound File simoultanious with „Start“: Pressing the ‚Start' button you can play any sound file (.WAV). This makes it possible to have a ‚show' e.g. a Timecodeshow which can be shown as time synchronized.

Ambient Base Intensity:
Global setting for the base intensity of the ambient light.

Units:
Change units: between cm, Inch, Meter, mm
and setting for the time units.
All values are recalculated after changing the unit.
Help Language: Language for the online help.



Quality:
Quality settings:
The quality of the visualization can be changed by the menu entry ‚3D – Quality' from low to high.

A lower quality needs less PC Power. Often a simple draw mode is sufficient to edit a complex show.
These individual settings can be done at this page and they can be stored for the next use.

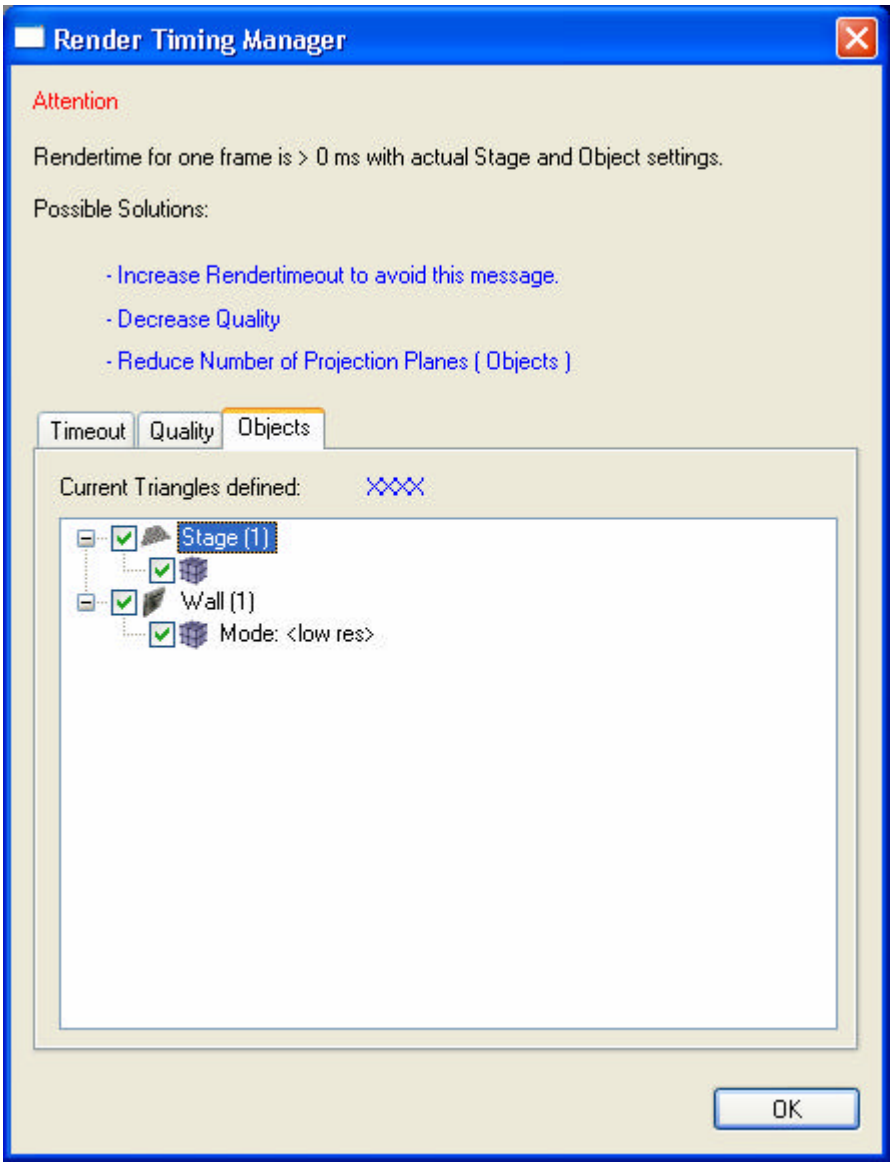
You can preview your settings without leaving the dialog by pressing the 'Set' button.

Hide Toolbars while running:

If the ‘Play’ button is pressed the 3D window is switched to full size and covers all other widows

Call Rendertime Validation Dialog:

To find out the performance of the renderengine the rendertime for one frame is calculated before pressing the ‘Start’ button.
If this time is below the timeout value automatic the ‘Rendertime Validation Dialog’ is opened.
Here you can change the settings to increase the performance or set up the timeout value.



3D View

Quality: Set the rendering quality to high, medium or low. The lower the quality of the visualization, the higher the performance (frames / second) of the application.

Textures: Switches the textures on/off.

View Selection Border: Draw a rectangular frame for the selected object. (on/off).

View Selection Wire Frame: Switches the wire frame of the selected object on/off.

View Center Cross: Switches the center crosses through the origin on/off.

Wireframe: Shows all objects as wireframes.

Solid: Shows all objects with surfaces.

2D View:

Update 3D View while Mouse Action:
3D-View is updated with every mouse action

Dock to Trusses: If you select a truss at the end the cursor changes. Now you can drag it (with pressed left mouse button) around to the end of another truss. If the switch is 'on' the dragged end will dock automatic to the other end.

8.1.5 Windows...

Full screen: Switches into full-screen mode.
You can also use the 'Enter' key on the keyboard to toggle between full-screen and windowed mode.

Tabbed: Shows the 2D and 3D window in a tabbed view.

Floating: Tiles the 2D and 3D window.

Floating optimized: Optimizes the floating view

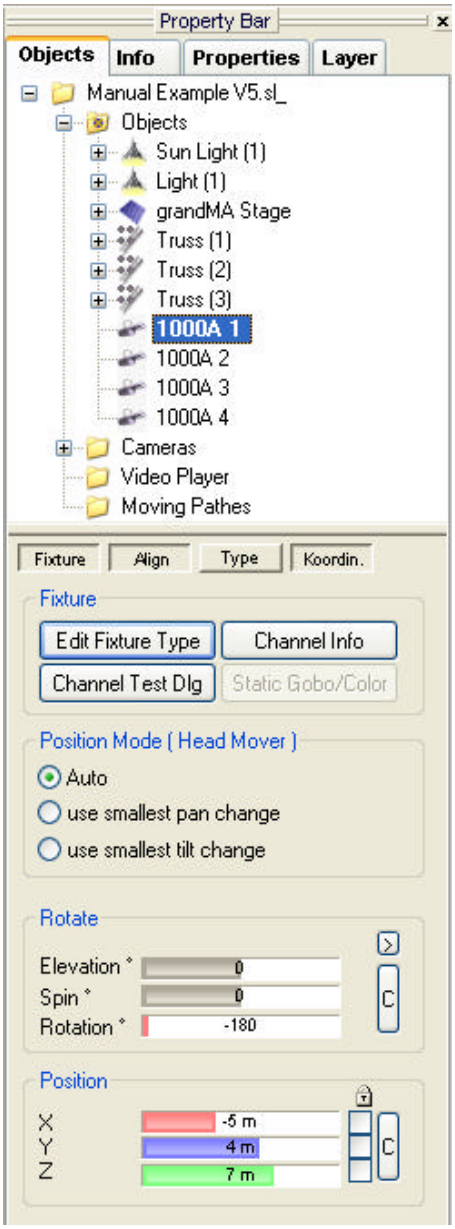
8.1.6 Help...

Help <F1>...: Shows context sensitive help.

About...: Shows the about box with the current version number.
In the lower part of the box you can find the license information.
In the about box under the entry 'File' you can find the release notes (Version history).

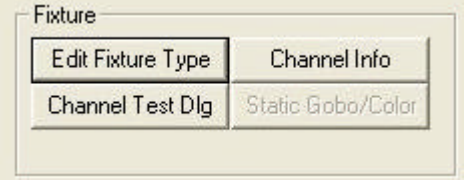
8.2 Property Bar

8.2.1 Objects



Every single item located on the stage: a lamp, a trusses, a person... is represented as an object. The structure of these objects is shown in the tree view in the object manager.
If you select an object in the tree with a mouse click, it will be marked in all views.
For a better organization objects can be renamed: After the selection do a single mouse click on the object name and enter your text.
Depending on the type of the selected object all object parameters will be shown in the lower part of the object manager window. In this case you can change, for example, the X,Y,Z location or the rotation.
If you want to make a copy, just select the object with the left mouse button in the tree view and drag it, while holding the button down, into the 2D or 3D view.

With these buttons you can switch parts of parameter on- or off. With the right mouse button you can switch the preferred part exclusive on.



Opens the dialogs to display and setup the fixture properties.

Properties of the Followspot function see: 8.8 Followspot Function.

8.2.2 Properties

On the ‘Properties’ tab of the ‚Property Bar’ following information is available:

One of the three coordinates X,Y, or Z cannot be shown in 2D-view. The insert value for the non visible axis can be set in the editable field. In this example the X-Y plane is shown.
If you insert an object in the 2D- or 3D-view the Z-coordinate (height) of the inserted object is set to 5 meters.

Gobos are projected with the selected resolution.
A higher resolution decreases the performance.

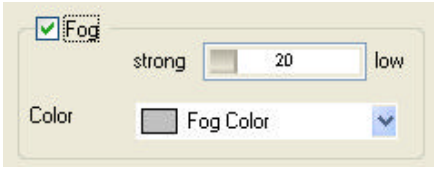
Grid settings for snapping of objects in the 2D- and 3D-view.

Zoom setting of the 2D-view.

Setting of the background color

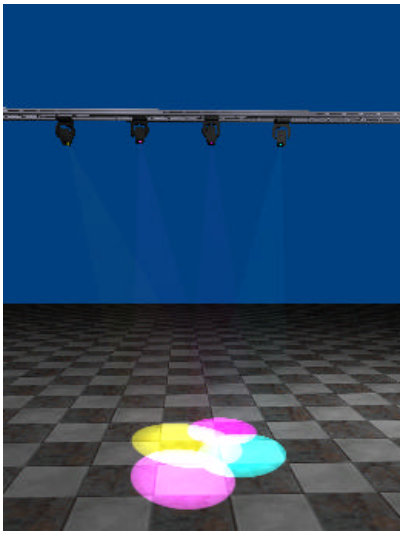
8.2.2.1 Fog

Fog can be set static or controlled dynamic via a desk channel.
The fog settings:

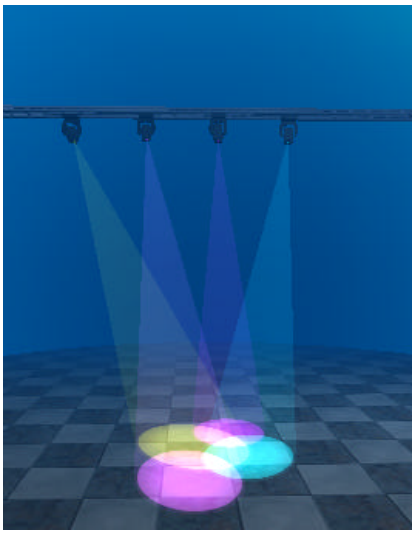


Fog: Switches Fog on / off.
strong…low: Setting of the fog intensity.
The intensity can be controlled via the grandMA desk.
For that click with the right mouse button into the control field and enter a channel index.
Color: Setting of the fog color.

Using fog generates a more realistic impression of the light:

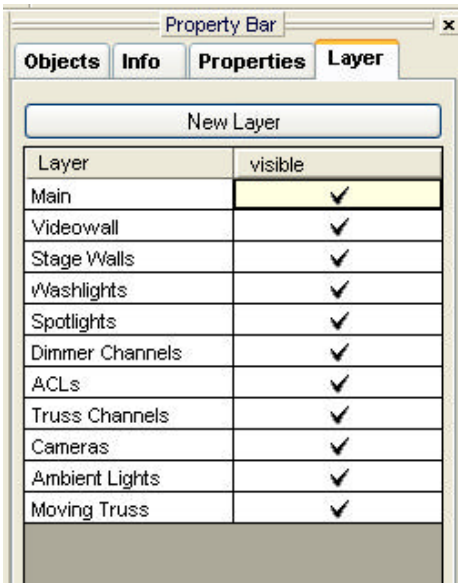


Screenshot without fog



Screenshot with fog

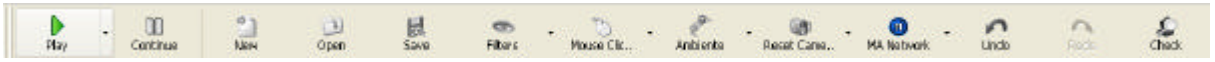
8.2.3 Layer



The administration of the objects can take place in different layers.
By default all objects like fixtures, stages, cubes etc. are created in the ‚Main' layer.
With the ‚New Layer' button additional layers can be added e.g. one could produce a layer for the dimmers and a Layer for the movinglights. Whether you are interested in the movinglights or the conventional light, you can always blend out (hide) the layer not needed.
Any layer can be added in the upper part of the layer view. Which layer an object is assigned to is decided with the , Grid View'. (See: 8.5Grid View).

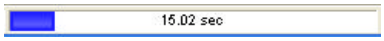
8.3 Toolbar

The toolbar contains several buttons that are related to the general operations of the program.



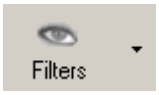
Time controlled actions like triggering of 'Explosion Objects' or ‚Moving Pathes with external Access' need to be assigned to specific points on the time axis.

The time starts with pressing the 'Play' Button at 0.00 Seconds and runs continuously counting up.



The time is displayed in the timeline at the status line.
There you can enter also a specified time in this control and the animation continuous with pressing the 'Continue' button at this time.

Create a new file, open or save a file



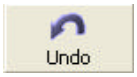
Filters:
To keep the 2D and 3D view clear you can blend out the objects you do not wish to see.

If the views contain many objects, it is often complicated to select the proper object with the mouse. With this tool you can set filters to exclude objects for selection. For example, when the selection of the stage object is erroneous, de-select the entry.

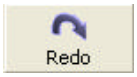
To obtain a better picture in the 3D view, you can switch the ambient lights on / off.

Sets the current camera position head on stage.

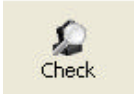
Opens the dialog to connect grandMA 3D to the grandMA desk.
See 5.1 Desk Connection Dialog.



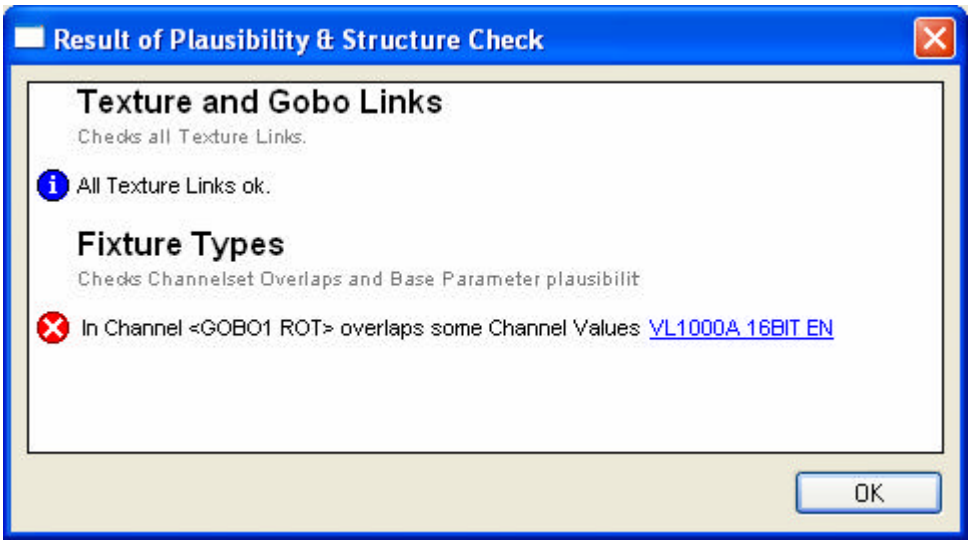
With the ‚Undo' function you can cancel plenty of actions.
(Keyboard: Ctrl. + Z)



The ‚Redo' function cancels the respective last ‚Undo' action.
(Keyboard: Ctrl. + A)



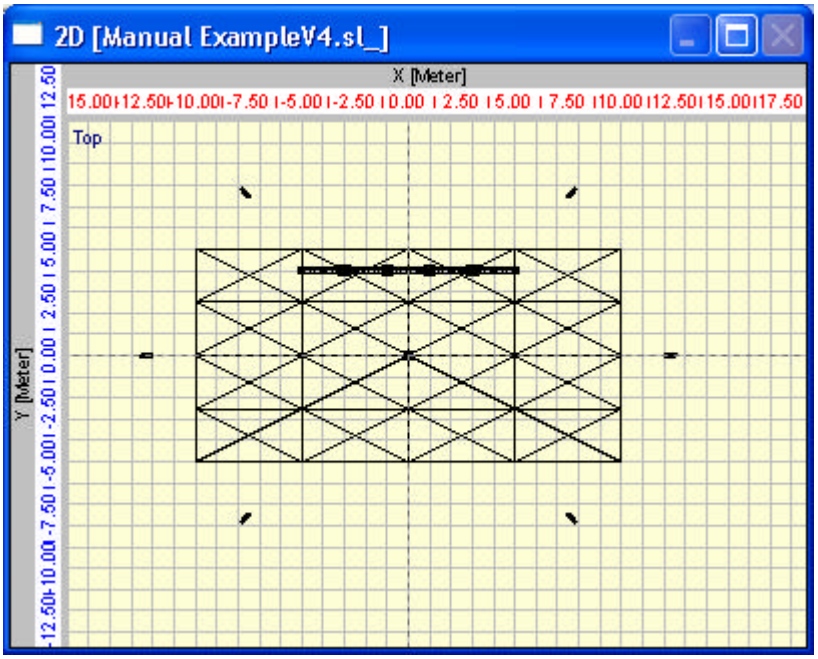
Opens a ‘Check’ dialog:


Result of Plausibility & Structure Check
Texture and Gobo Links
Checks all Texture Links.
All Texture Links ok.
Fixture Types
Checks Channelset Overlaps and Base Parameter plausibilit
In Channel <GOBO1 ROT> overlaps some Channel Values VL1000A 16BIT EN
OK

A validity check about all used textures and fixtures used in the current show is done.
The result shows if textures are missing or if the fixture type contains inconsistent channel values.

8.4 2D View

The 2D window is the platform to create the technical drawing of the stage:



The side toolbar offers the following functions:

Select object tool; select multiple objects by holding down ctrl while clicking with the mouse.

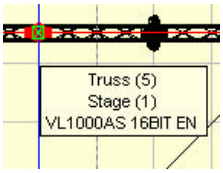
Zoom function

Switch to ‘Top’, ‘Right’, ‘Left’ view

Insertion of dynamic trusses
Depending on the button a 1…4 point truss is inserted.

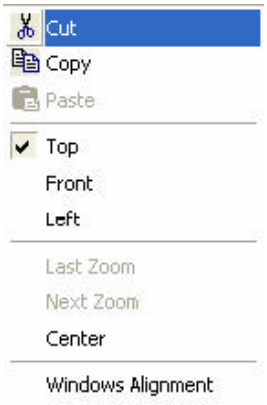
To insert a truss click on the desired start point, while holding down the left mouse button move to the end position. The truss visualization will be updated during the movement. Docking to other trusses is indicated by a change of colors and a „Plop“ sound.

Docking the selected object to a magnetic helpline.
Magnetic help lines are added by clicking with the mouse on the ruler and then drag it to the 2D view. When releasing the mouse button the helpline will appear.
Now select one or more objects and click on the ‚Align’ button, the selected objects will be automatically aligned to the helpline.
Notice: If the grid is active, objects will be aligned automatically.



If several objects are on top of each other hold the 'Shift' key down and do a left mouse click on the objects. In the appearing dialog you can choose the preferred object.

Similar to a normal CAD program, the 2 dimensional view on the construction area can be changed by clicking the right mouse button into the 2D view beneath the stage:



A popup dialog appears:

- The selected object can be copied to the clipboard
- The views can be changed between Top, Front etc
- You can swap between the last zoom settings or centre the zoom range.
- You can arrange various views in the 2D window simultaneously.

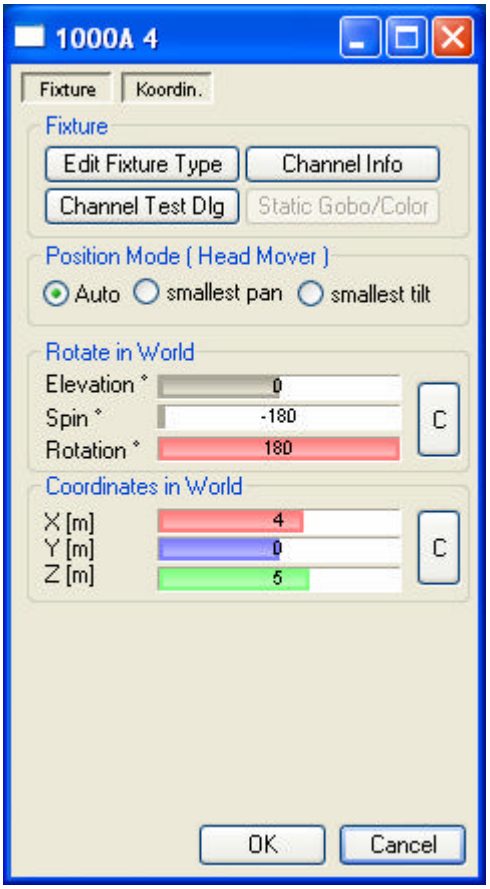
8.4.1 Context Dialog

If you select an object with the right mouse button, a context menu will appear showing the specific alternatives
what to do with it.

Every object type is assigned its own property dialog. You can then distinguish a fixture property dialog from a traverse property dialog which for example doesn't have any channel info.

8.4.2 Object Properties

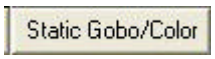
If you choose ‚Object Properties' in the context menu of a fixture the following dialog will appear:



The most impressive tool that can be used to change the properties of the objects is the 'Properties' dialog.
This dialog is not modal, this means that you can see your modifications directly in the 2D or 3D view while changing the values in the window.
For example, change the Y-position of a fixture by setting the focus with a left mouse click into the slider field ‚Position X'.
The slider control field allows the changing of values in several ways:

- Shift the mouse cursor above the slider. It changes the appearance to an horizontal arrow. Then press the left mouse button, move the value slider controlling.
- With a left double click in the control field, you can enter numerical values directly.

With the buttons ‚Edit Fixture Type', ‚Channel Info' and ‚Show Channel Test' you can reach the respective dialog.

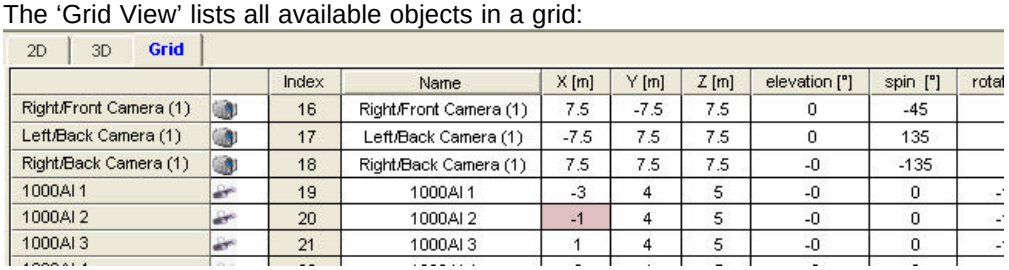


If the fixture has a colorwheel or a mixer this button is disabled.
Otherwise you can set the default values for the color and a gobo.

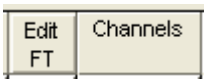
For the explanation of 'Position Mode' refer to: 8.8 Followspot Function.

8.5 Grid View

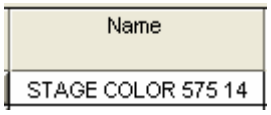
The ‘Grid View’ lists all available objects in a grid:



		Index	Name	X [m]	Y [m]	Z [m]	elevation [°]	spin [°]	rotat
Right/Front Camera (1)		16	Right/Front Camera (1)	7.5	-7.5	7.5	0	-45	
Left/Back Camera (1)		17	Left/Back Camera (1)	-7.5	7.5	7.5	0	135	
Right/Back Camera (1)		18	Right/Back Camera (1)	7.5	7.5	7.5	-0	-135	
1000AI 1		19	1000AI 1	-3	4	5	-0	0	
1000AI 2		20	1000AI 2	-1	4	5	-0	0	
1000AI 3		21	1000AI 3	1	4	5	-0	0	

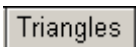


With Edit Fixture Type and Channels you reach the fixture type or channel dialog.

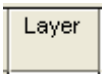


The name of the object.

These are the coordinates of the object in the virtual room.



The amount of triangles describes the complexity of the object.



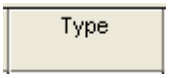
The layer is displayed and can be changed.

The object is invisible if this switch is not set.

Intersections. Projection of the gobos and colors on the object surface.
This button is very important for the visualization performance!
You can switch the intersections for all objects on or off. If the intersection is switched on, all beams that hit the object are calculated by the render engine. For every triangle of the object gobo projection, color, intensity etc. are calculated and shown in the 3D view.
For fast online rendering, the intersection is switched on only for the stage object and the surrounding room.
If you want a more realistic rendering, for example for an avi video, select additional intersections for the corresponding objects.

The ‚Follower Mode’ is activated on the object surface.

If the channel is a dimmer the color is shown here.

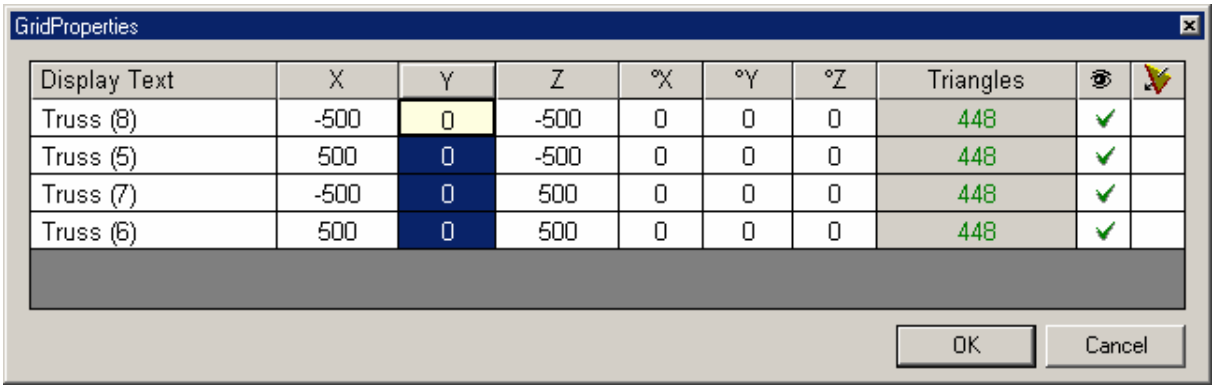


Fixture type.

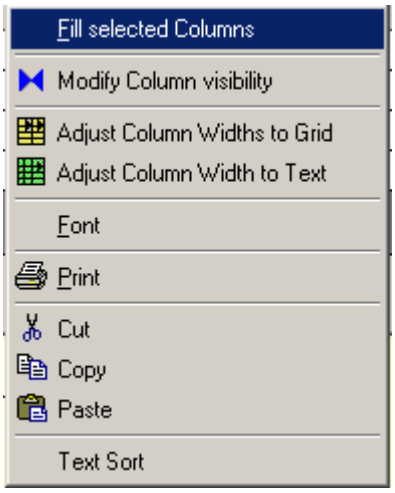
Colour mixing system CMY or RGB

8.5.1 Working with the Grid

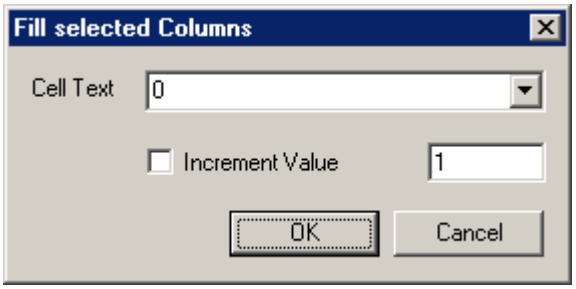
The grid is very useful when you wish to change the properties of several objects.
For example, if you want to change the offset of all vertical trusses, select all vertical trusses in the view and list them in the property grid.


GridProperties
Display Text | X | Y | Z | °X | °Y | °Z | Triangles
Truss (8) | -500 | 0 | -500 | 0 | 0 | 0 | 448
Truss (5) | 500 | 0 | -500 | 0 | 0 | 0 | 448
Truss (7) | -500 | 0 | 500 | 0 | 0 | 0 | 448
Truss (6) | 500 | 0 | 500 | 0 | 0 | 0 | 448
OK
Cancel

Select the ‚Y' entries and do a right mouse click on the headline 'Y'.



Select ‚Fill selected columns' in the context menu.



The dialog that appears allows you to enter new values into all selected cells.
If ‚increment values' is selected, the first column is filled with the start value. The next value is incremented by the given number and so on. This is, for example, useful for entering new DMX offset addresses for a large number of fixtures or to build stairs with a number of boxes.

X	Y	Z
-500	0	-500
500	0	-500
-500	0	500
500	0	500

If you do not want to select the whole column, hold the ‚ctrl'key down and select the fields you would like to change.
The filling mechanism also works in this mode.

To sort the entries you can use the ‚text sort' function in the context window

8.5.1.1 Printouts

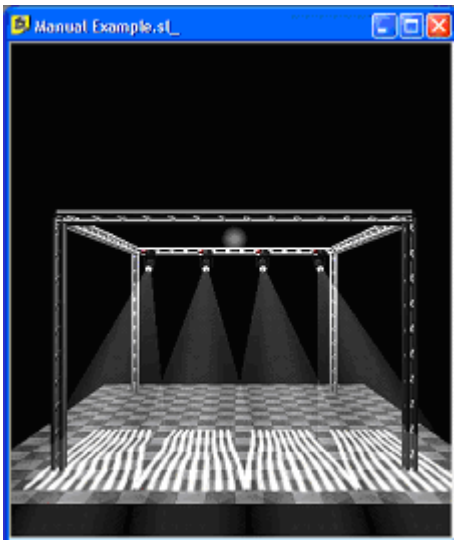
The property grid is also useful for printing equipment lists. Before printing you can format the columns. In order to print right click the mouse inside the grid and select ‚print' in the context menu. In the appearing dialog you can change the printer properties.
Printing of patch lists can be done with the menu function 'File – Print'.

If you want to make printouts of the 3D View, you can use the Windows copy function.

- Hold the ‚Alt' key down an press the ‚Print' key on the keyboard.
- The content of the actual window is copied to the clipboard.
- Now you can insert the contents of the clipboard into any drawing program for example ‚Paint' via ‚Edit – Paste'.
- The picture is ready for post editing

8.6 3D View

The 3D view enables you to obtain the most realistic impression of the real stage. In this view you can take a walk around with a video camera and get a realistic impression of how your creation will look in reality. You can create several cameras by dragging a new camera from the data base into the 2D- or 3D view and step from camera to camera with the ‚Tab' button of the keyboard.



You should try walking around using the keyboard to get a feeling for stage control.
A special algorithm allows the positioning of objects in the 3D view. If you click with the mouse into the view, the algorithm searches for the first object under the mouse arrow. If an object is found, it is selected and marked with a 3D cross. For better orientation, the object is marked in the 2D-view, as well as in the object manager.
The axes of the cross are highlighted in color:

---- Red X-axis
---- Blue Y-axis
---- Green Z-axis

The object itself is bordered with a wire frame to show the contours.
If you want to move the object, keep the left mouse button down and move the object around. Keeping the left mouse button pressed you can move the object in the X-Y plane or level. If you want to change the height (the Z-level) keep the left and the right mouse button down and move the mouse forward or backward.
Remember that the magnetic grid will be also active in the 3D-view if turned on. So if you want to position a fixture outside of the currently selected grid steps switch it off or increase the resolution of the grid.

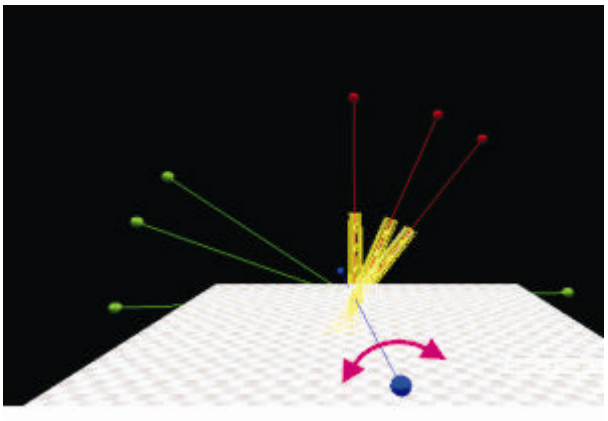
If you catch an object at the colored axis you can do one of the following actions:
(These actions also can be done in the 2D view.)

Move along the object axis

Rotate around the object axis

Scale

Example: Rotation in the 3D view:



If an object is selected in the 3D view and the rotation tool is selected you can rotate the object directly with the mouse around the axis. Therefore move the mouse near the colored axis and rotate the object with the pressed left mouse button.

In the example beneath the rotation is done around the Y-axis (blue).

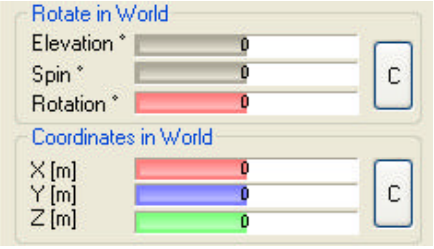
Rotations in the 3D view are done around the colored object axis.

8.6.1 Rotation of Objects

The rotation of objects can be done in two different systems:

- Rotating in the 3D view around the object axis as described above.
- Or rotating via the property dialog around the axis of the coordinate system:

In the Object Properties you can rotate an object around the axis of the coordinate system:



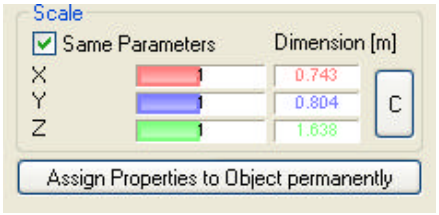
Elevation: Rotation referring to the *X*/*Y*-plane of the coordinate system.

Spin: Rotation seen from the top view. This virtual axis sticks through the object origin and runs parallel to the *Z*-axis of the coordinate system.

Rotation: Rotation around the *X*-axis of the object. Data are also shown in the grid

8.6.2 Scaling of Objects

To set the dimensions of an object to a specific size, all sides of the object can be scaled with an own scaling factor.
The desired dimension in *X*, *Y* and *Z* direction can also entered numerical in the edit fields.

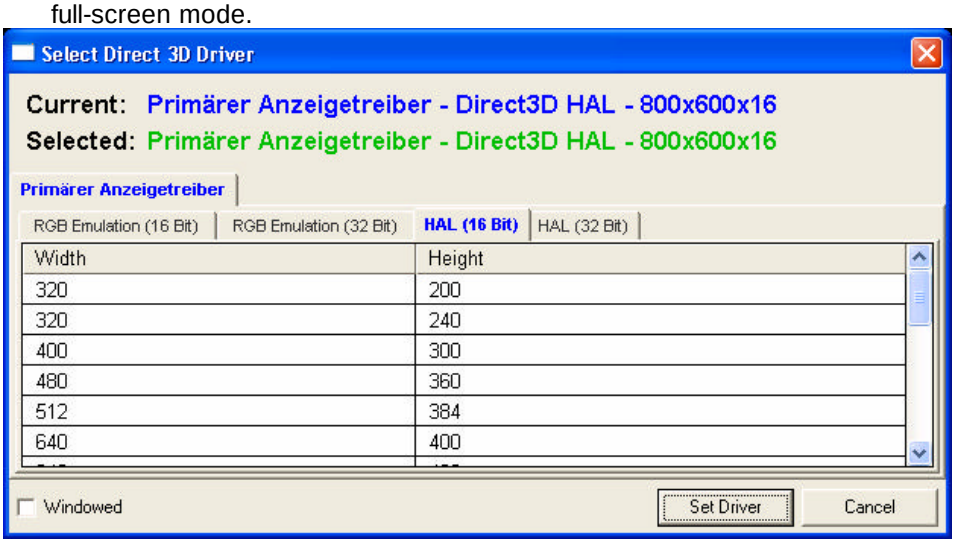


Important: (in conjunction with Moving Pathes)
‚Assign Properties to Object' – Rotation parameters, coordinates and scaling factors are assigned to the object permanently. I.e. the changed position in the 3D world and the changed scaling is assigned to the object as origin data.
This step should be done before an object is assigned to a moving path.
So the moving path can work correctly if for example objects are combined together with sub objects.

8.7 Full-screen View

This view uses the full screen for the 3D view.
There are three ways to switch into the full-screen view:

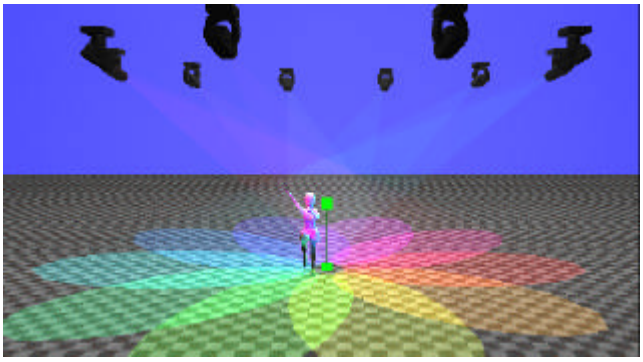
- Select the menu entry ‚View full-screen‘
- Hit the ‚Enter‘ key on the keyboard.
  The ‚Enter‘ button switches to the full-screen view. ‘ESC’ switches back.
- Do a right mouse click into the 3D window and select ‚Change Device‘ in the context menu.
  In the following dialog you can select the resolution of the 3D window.
  If you deselect the ‚windowed‘ marker and choose ‚Set Driver‘ the application switches into the full-screen mode.



Type ‚Enter‘ to go back to the windowed view or ‚Esc‘ to stop the visualization and go back to the windowed view.

8.8 Followspot Function

You can use the grandMA 3D software in collaboration with the grandMA desk to position the beams of the fixtures. The Followmode can be used to enter the Pan/Tilt values for the desk presets or to use the fixtures in real time as follow spots.



The 'Positioning Mode' of grandMA 3D calculates the Pan/Tilt values for a focus point on the stage or any object.
This point faces on the intersection area (the surface) of the object.

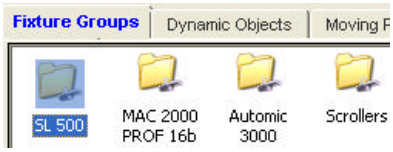
For this the 'Followmode' of the object has to be switched ‚on' in the grid.

So e.g. you drag a staircase stage element on the stage and switch the 'Followmode' of this object 'on', you can walk upstairs with the mouse cursor and the beams will follow.
The calculated Pan/Tilt data is send continuously to the connected grandMA desk.
This works with moving head fixtures as well as with moving mirror fixtures.

The 'Play' mode can be switched on or off.
- If 'Play' mode is on, all fixtures are updated in the 3D View.
- If 'Play' mode is off, only the fixtures positioned via grandMA 3D are updated.

Switches the 'Positioning Mode' on in the 3D View Toolbar.
The cursor marks the focus position in the 3D View as a target cross.

Select the fixtures to position in one of the following ways:



- Select a group in the 'Data Base'.
  These groups correspond to the groups in desk.

- Or select the desired fixtures directly in the 3D View with the left mouse button or make a multi selection of several fixtures with 'Ctrl' + left mouse button.

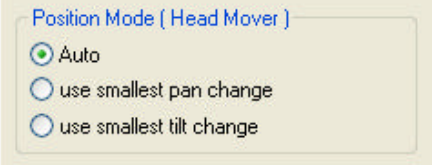
- Or select the required fixtures at the grandMA desk.

Selected fixtures are highlighted in the grandMA desk and the 3D**. Therefore the desk has to be in the 'full tracking backup mode' and in grandMA 3D the following switch must be switched 'off'**:

'Ignore desk selections'

You can find the switch via right mouse button click on the 'Positioning Mode' button:

'**Height offset**' – The focus of the beams can be shifted in the Z-direction (height) with a constant offset to the intersection area. Enter the height in the upcoming dialog.
You can also change the offset directly by using the mouse wheel.
This feature enables you to follow the top of the person.
The height is marked as a vertical line in the 3D View.



For head movers there is a special setting for the position mode:
Because of the rotation characteristics of a head mover there are always two, sometimes even more possible ways to reach a certain position.
In Auto-mode the application tries to find the optimal (shortest movement) to the requested position.
The ‚uses smallest pan change' or ‚use smallest tilt change' option forces the algorithm to choose the solution with the smallest change of pan or tilt value.
Use one of those two options, if you want to force a certain behavior of your fixture in tracking mode.

Note:
Often the problem off the light position mode is, that the min and max values are the other way round e.g. min 180° max -180°. When you changed this in the 'fixtures type' dialog, positioning works well here.
If the spot shines in the opposite direction after pressing the 'Play' button, you have to change the 'INVERT' pan or tilt parameter at the desk.
On the desk switch to ‚Full Access'- in the Fixture Layer and change the 'Func.Pan' or 'Func.Tilt' 'INVERT' flag.

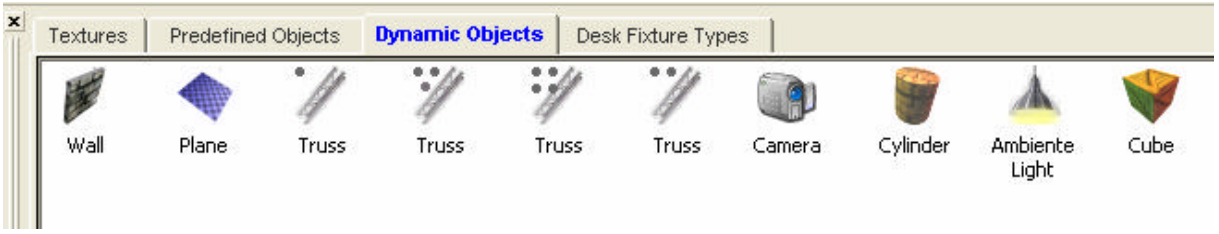
8.9 Data Bases

The whole virtual 3D world consists of objects. You can find all these objects in the database which acts your component box to build your 3D world. The database is not a static pool of predefined objects, it is managed dynamically and growing continuously.
Objects can simply be dragged and dropped into the 2D or 3D view.

The data base resembles a catalogue divided into several property sheets. These sheets contain sub sheets like the fixture sheet that contains, for example, the fixtures sorted according to the manufacturers.

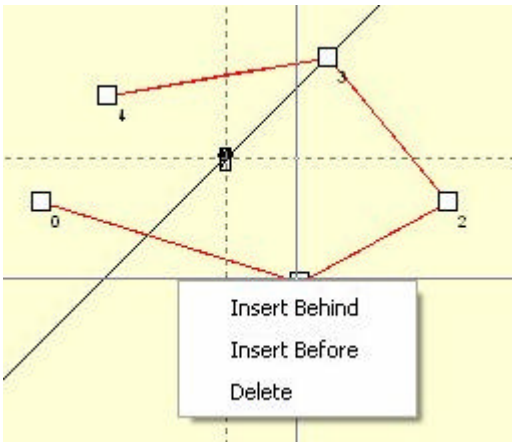
8.9.1 Dynamic Objects

In contrast to pre-defined objects, dynamic objects are built by the user at runtime. You do not select an object from a pre-defined library; you create, for example, a truss from the left to the right side of the stage dynamically with the mouse.



8.9.1.1 Wall Objects

With this type of object you can you can insert dynamic walls.
For this you pull the object into the 2D or 3D view using the left mouse button.



It is easy to move the corners or to provide more walls in the 2D view (Top, Bottom):

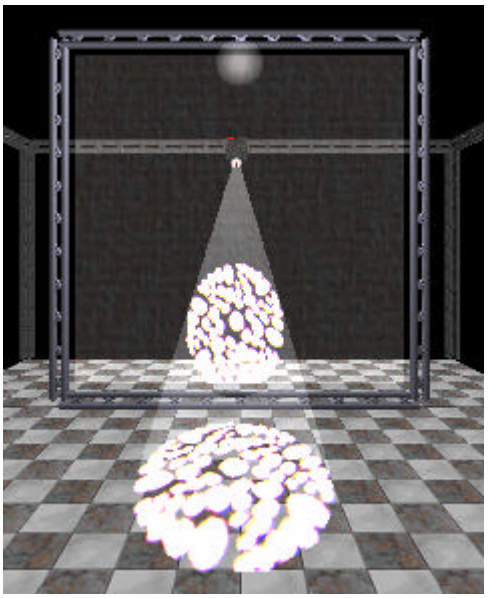
- Move the wall corners with the left mouse key pressed.
- With the right mouse button you can add further corners or delete them.

You can follow the changes in real-time in the 3D view.

8.9.1.2 Plane Objects

With this type of object you can insert dynamic planes or canvas.
For this you pull the object into the 2D or 3D view using the left mouse button.

To set properties and assignments of textures etc. for these objects use the property dialog.



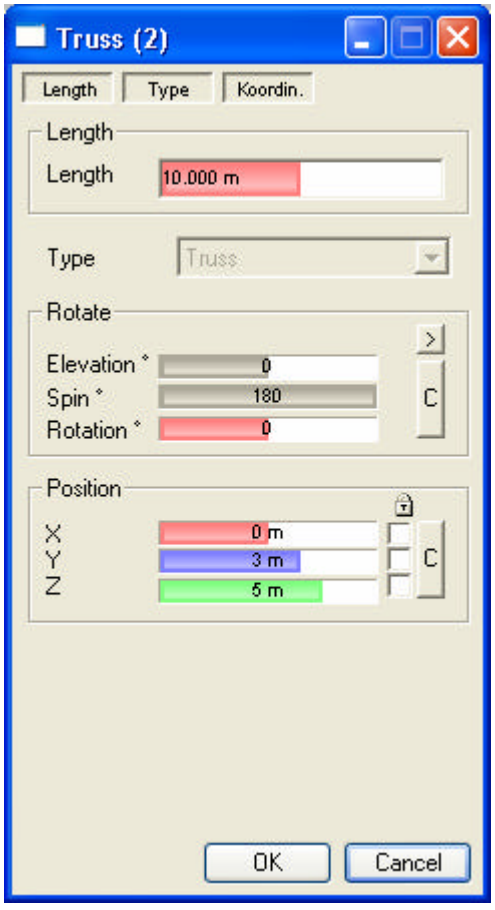
This Example shows a transparent canvas framed with trusses.

To make the Plane transparent set the vertex texture to transparent.

8.9.1.3 Trusses

The simplest way to insert new trusses is to work in the 2D view and use the truss buttons from the toolbar, as described in section 2D View.
But you can also drag and drop trusses from the data base with 1, 2, 3 or 4 pipes into the 2D- or 3D view.

Dynamic Trusses:
If you insert dynamic trusses from the data base into the view, they are inserted with the default length of 1 meter.



You can change the truss data in the property dialog.

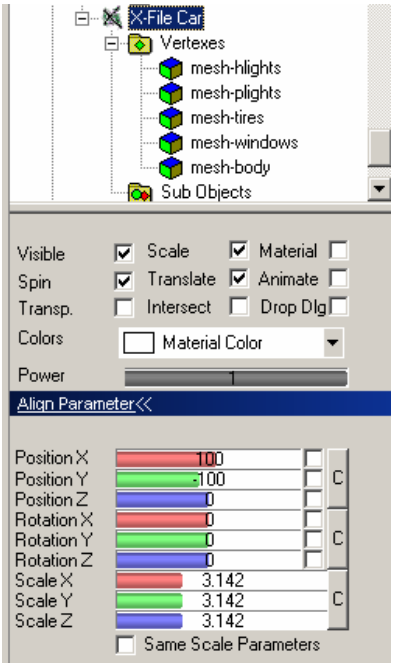
8.9.1.4 Stage Objects

Only one stage object is possible.
You must have at least one stage object.
The X-Y Dimensions are communicated with the grandMA desk.

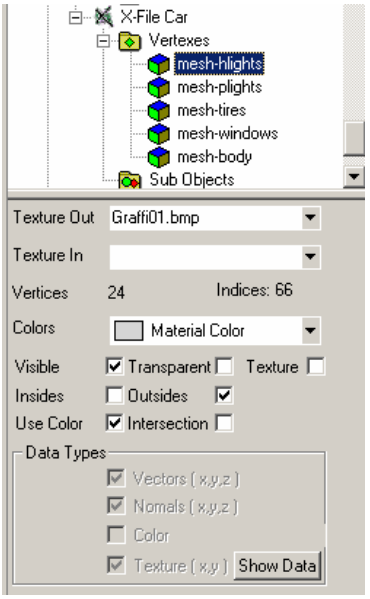
8.9.1.5 3D-Files

GrandMA 3D supports several data formats to define bodies in 3 dimensions objects. The following file formats (3D and 2D) can be imported:
3DS, dxf (3D only), jpg, bmp, gif, tif, pgm, ppm, tga, pcx, psd and eps.
Import is realized through an „open plug-in“ import structure and can be extended to further formats. After importing grandMA works on files with its own internal 3D format.

3D-files consist of a mesh of triangles that form a body.
A great amount of X-files are available in the Internet for free download.
Objects can be imported via the menu entry ‚File – Import Objects’.
Importing of X-files also can be done via the database X-File icon: Drag the X-file icon holding the left mouse button down into the 2D- or 3D view and drop it.
A file dialog appears. Select the file and after clicking the OK button the object appears in your scene.



Now change the properties of the X-file object to meet your requirements.
If you want to scale the whole object, set the ‘Same Scale Parameter’ switch and adjust the size with the scale slider.
You can watch the results online in the 2D- or 3D view.
Move the object sliders to the final position with the position and rotation.



The X-file object consists of sub objects with different vertexes.
In this example, the car consists of the body, the windows, the tires and the lights. You can ‘dress’ this car object by covering different bitmaps over the meshes for each sub object.

8.9.1.5.1 Exporting Objects

If you have modified an object you can export it for further use in other projects.
Select the object in the object manager with the right mouse button and select 'Export' in the context menu.
Choose a path for the export file and type in a file name.
If you have exported the file to the 'models' directory it appears in the data base view.
For storing the 3D object grandMA 3D uses its internal .xob file format.

8.9.1.6 Cylinder Objects

You can build cylindrical objects with this icon and place them onto the stage.
After dragging the icon with the left mouse button into the 2D or 3D view a dialog appears to specify the dimensions and the textures.

8.9.1.7 Ambient Lights

There are two types of lights to illuminate the scenery:
- Sun Light: The ‚Sun Light' illuminates the whole scenery.
- Lights: Point lights. You can set several lights to supply your scenery with an even illumination.

The lights can be switched on or off with the switch in the toolbar as described in 8.3.

8.9.1.8 Cube Objects

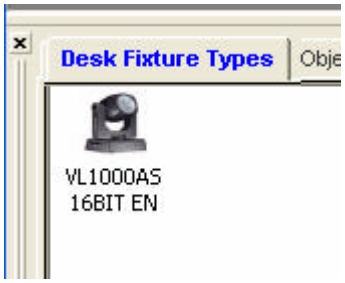
With cube objects you can build rectangular objects to place onto the stage.
Because Cube Objects are covered inside with textures they can also be used to build rooms placed over the stage.
After dragging the icon with the left mouse button into the 2D or 3D view a dialog appears to specify the dimensions and the textures.

8.9.1.9 Cameras

You can put several cameras into your scene by dragging the camera object from the data base into the 2D- or 3D view.
Switch from camera to camera in the 3D view with the keyboard 'TAB' button or select the preferred camera in the object manager or 2D view.

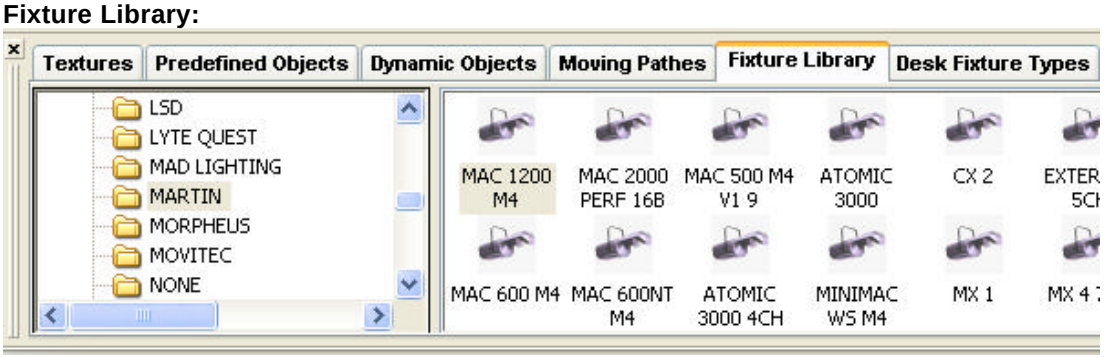
8.9.2 Fixtures

Desk Fixture Types:



The fixture sheet shows all fixtures included in the current show.
The types are loaded from the grandMA desk's fixture library.
If the fixture type is modified as described in 5.2 Modifying Fixtures and the application is connected to the desk or is off-line editor, the desk will recognize these changes and put them into its data base.

Fixture Library:

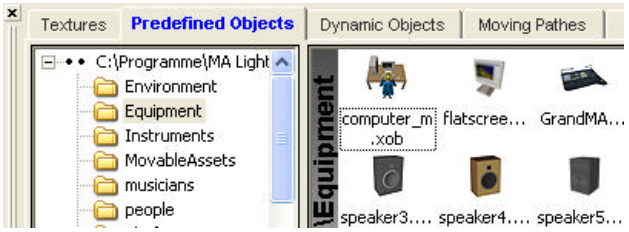


The Fixture Library is identical to the grandMA desk fixture library.
If a fixture is dragged from the library into the 3D View, the show in the desk is extended with this fixture.
So a fixture setup can be made with grandMA 3D without a connected desk:

- Make a setup with grandMA 3D
- Create an empty new show with the desk (no session created).
- Start a master session at grandMA 3D.
- Invite the desk to the session (Join).
- Now all fixtures are transferred automatic to the empty show of the desk.
  The desk gets automatic the master of the session.

8.9.3 Predefined Objects

The supplied library comes with various 3D objects, ordered by certain topics.
This library is constantly expanded.
If you have special requests please do not hesitate to contact us!
The 3D objects in the library have been specially designed for grandMA 3D.
They therefore possess a visible number of triangles so as not to limit the performance too much.



Complex superstructures such as crossbeams with wired lights, steps, people, instruments etc. can be provided by the user and saved as ‚Predefined Object'.
Complex objects can therefore be made available for later projects.

Simply pull the desired object into the 3D view using the left mouse button. It will appear in the centre (0,0,0). Then you can freely move, turn or scale it.

If you wish to place other objects you can do this using the import function.
Select ‚File – Import Objects' from the menu and in the next dialog you will see the supported file formats.

You can find the objects sorted in a subdirectory from :
…\grandMA 3D\Data\Predefined Objects\...
Some examples in the miniature view:
Environment (Stadium, stages, halls etc.):

Equipment:

Instruments:

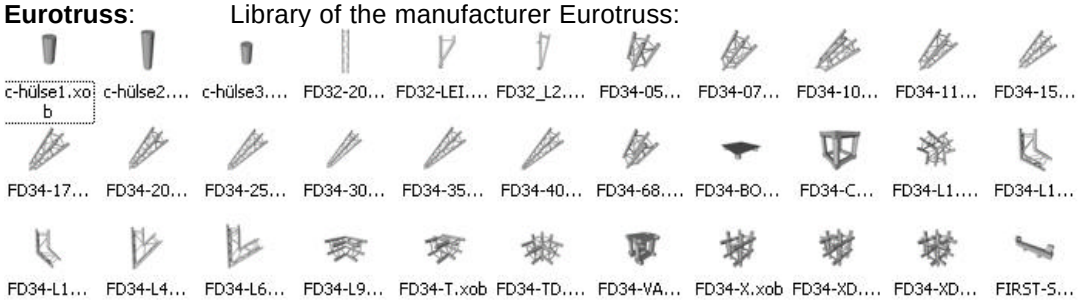
Movable Assets:

Musicians:

Static Trusses: (Additional to the trusses from the 2D-View that are generated dynamical)

2-,3-,4-Pipes:	Straight truss elements in several length
Trusses 3W:	3 pipes circle trusses (circles, semi circles, quarter circles)
Trusses 4W:	4 pipes circle trusses (circles, semi circles, quarter circles)

Eurotruss: Library of the manufacturer Eurotruss:



8.9.4 Groups

Fixtures or Dimmer can be combined to ‚Groups' at the desk or via the grandMA 3D. This makes programming of shows easier or allows a fast multiselection for the Followspot function.

To build a group in grandMA 3D select the members and press the right mouse button in the 3D View. In the context menu select the entry 'Store Fixture Group' and a new group is created.
This new group membership is send to the desk immediately.

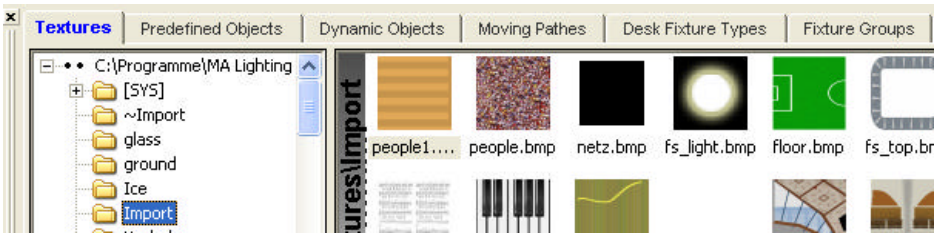
8.9.5 Worlds

Worlds allow a filtered view on a part of a show.
If a world is selected only the members of this world are visualized.

To build a world in grandMA 3D select the members and press the right mouse button in the 3D View. In the context menu select the entry 'Store Fixture Worlds' and the new world is created.
This new world membership is send to the desk immediately.

8.9.6 Textures

Textures are bitmaps (.bmp, jpg files) that “dress” the wireframes of your objects.
You can select a texture from the catalogue in the database and cover the selected object by dragging the texture in the 2D- or 3D view.



You can use your own textures like simple drawings, company logos or digital photos.
You only need a copy of the pattern in one of the supported formats.
Copy the file to \Program Files\MA Lighting Technologies\GrandMA 3D\Data\Textures\... and it will appear in the preview.

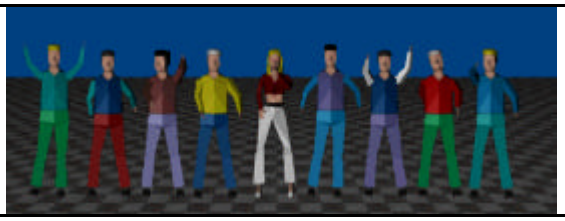
8.9.6.1 Colorkeying Textures

With this technique you can save a lot of polygons. So you get a much better performance.
Colorkeying makes it possible to draw images with transparent colors.
A Color Key is when you choose a certain color in the image to be transparent.

GrandMA 3D attaches two conditions to use the color keying technique for an image:

- The transparent color of the image is defined as 255, 0,255 (R, G, B) i.e. you have to paint the transparent areas exactly with this color.
- The name of the image must have the extension “@CK”. For example Mask@CK.BMP.

Note:
We recommend using the .BMP format for color keying images. The compression of other formats may cause fraying effects at the transparent boarders.
The following example shows a typical application for Colorkeying:

Bitmap with Colorkeying background (255, 0, 255) Mask@ck.bmp	**Appearance in grandMA 3D**
	

Additional conditions for Colorkeying Images:

Filename	Consequence
XYZ@CK(AUTO).jpg	Always the color of the first pixel in the upper left corner is taken as key color
XYZ@CK255000255.jpg	The 9 digits after the “@CK” are used as RGB value for the key
XYZ@CK(255,0,255).jpg	The key RGB values are the numbers in ()
XYZ@CK(BLACK).jpg XYZ@CK(WITHE).jpg XYZ@CK(RED).jpg XYZ@CK(GREEN).jpg XYZ@CK(BLUE).jpg	The key is defined as text in ()

Otherwise Value RGB (255, 0, 255) is the key color for the mask

8.9.7 Playback of Videos (.avi)

GrandMA 3D is able to playback videos in the virtual 3D world.
The videos can be started by the grandMA desk.

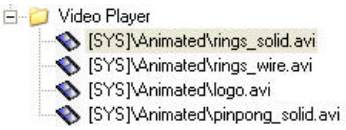
Surfaces of objects can be covered with video (.avi) files. This works similar as covering with textures.

The videos have to be present in the AVI format.
In the current version the AVI files have to meet the following restrictions:
With and height of the AVI should be divisible by 128 for example 256 * 128.
The color depth must be 16 bit.

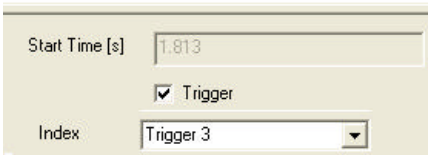
Several movies can run simultaneously. Their number is restricted by the performance of the PC.

To assign a movie to an object's surface please proceed in this way:
Drag the movie file from the ‚Data Base' to the selected object in the 3D View or to the object in the ‚Object Manager' and drop it.

Because movies need the assignment to exact moments on the timeline it is necessary to define a starting point. So for every AVI file a ‚Video Player' object is created in the ‚Object Manager'.
With the ‚Video Player' the starting point can be defined on the timeline or if the movie can be started by a dimmer channel via the desk.



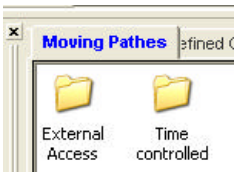
„**Video Player**" objects in the ‚Object Manager'.



Start Time: Start the movie at nn.nn seconds after pressing the ‚Start' button
Trigger: If selected the movie can be controlled external
Dimmer: Select desk channel for controlling

8.9.8 Moving Pathes

Moving Pathes allow the movement of objects like trusses with their attached sub objects like fixtures. You can attach a Moving Path to an object via dragging the Moving Path at the Data Base and drop it onto the desired object in the Object Manager. Then fill in the Moving Path parameter in the Object Manager.
Controlling of the position is always done relative to the origin coordinates. I.e. if an object with moving pathes is moved manually, the tracks of the Moving Pathes are always moved parallel to the new object coordinates.
Several Moving Paths can be attached to an object:



External Access: Controlling of movements in the 3D Space via the grandMA Desk
Time controlled: Time controlled movement in the 3D space

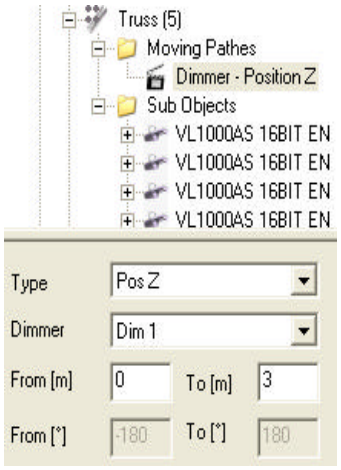
8.9.8.1 External Access Moving Pathes (controlling via dimmer channel)

The movement in X,Y or Z-direction or the rotation around the X,Y or Z -axis is controlled by the dimmer channels of the connected grandMA desk.

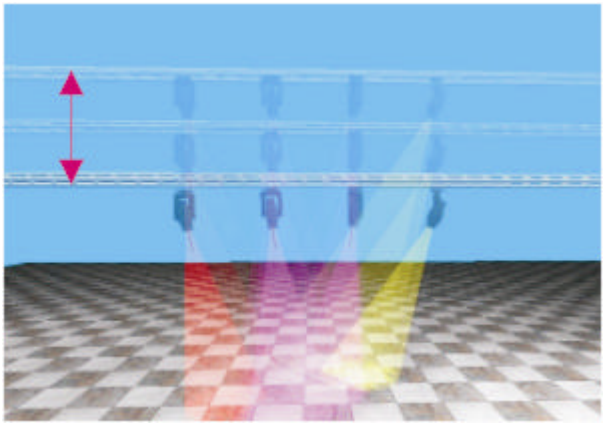
Dimmer Custom, Position…Rotation X,Y,Z: Movement or rotation of an object controlled via a dimmer channel

Trigger : (without function)

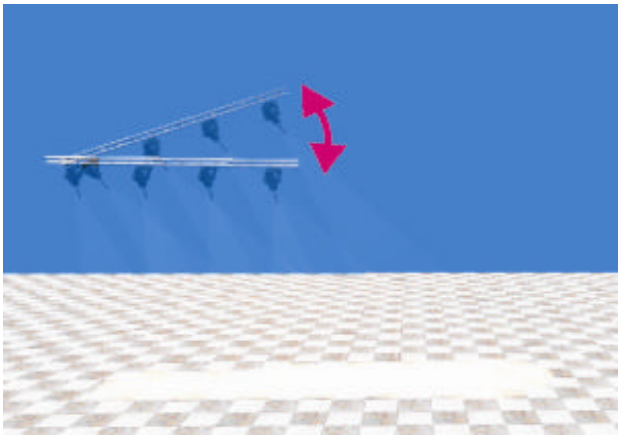
Example for 'Dimmer Z-Position':
Movement of a truss with 4 fixtures in Z-direction (lifts and goes down).
A truss with 4 mounted head moving fixtures should be lifted with the dimmer channel 1 of the grand MA desk



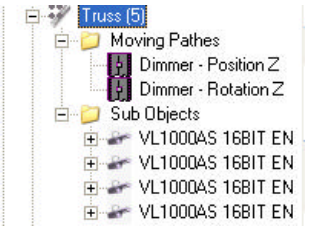
- Create 4 fixtures and one dimmer with the grandMA desk
- The dimmer should be named „Dim 1"
- With grandMA 3D the 4 fixtures are assigned as sub objects of the truss.
  This is done by dragging and dropping the fixtures to the truss in the object manger.
- From the Data Base assign the Moving Path „Dimmer Position Z" via drag and drop to the truss in the Object Manager.
- Enter the properties of the Moving Pathes in the Object Manager:
- **Type**: Pos Z (can be changed if it's a 'Dimmer custom' Moving Path)
- **Dimmer**: In this box all dimmers from the desk are listed with their names. Select „Dim 1".
- **From .. To:** Input for the relative movement range.



If all entries are done, the truss (5) with all mounted fixtures can be lifted 3 meters via the desk dimmer channel “Dim 1”.



Combining several different Moving Pathes you can realize nearly any movement you want to.
In the example beneath, a movement in z-direction is added with a rotation around the y-axis.



Attention: If you have rotated or scaled your objects press first ‚Assign Properties to Object’ (see: 8.6.2 Scaling of Objects) for your sub objects.
Otherwise the Moving Pathes act on the origin data and you don’t get the requested movement.

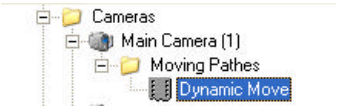
8.9.8.2 Time controlled Moving Pathes

By pressing the „Start“ button the time starts at the point 0.0 seconds.
Beginning from this time on the positions of the objects can be controlled by „Time controlled Moving Pathes“

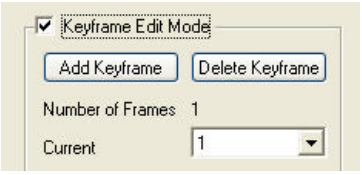
Circle Path: Continuous movement on a certain orbit.
Move: Continuous movement between two points.

Dynamic Move: Time controlled movement between different points.
This makes precise camera movements possible for example from A via B to C…
Pathes between the points are called Keyframes. The route between the points will be linearly interpolated.

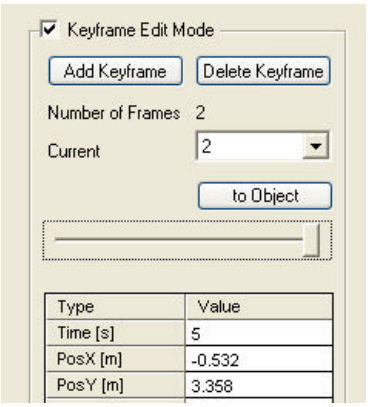
Example: Camera movement from A to B and back in 10 seconds.



- Drag a Dynamic Moving Path on the Main Camera (1) object in the Object Manager



- To modify the Dynamic Moving Pathes switch into the ‚Edit Mode’
- Move the camera to the start position ‚A’
- Press ‚Add Keyframe’
- As start time for the first Keyframe enter 0.00 s in the following dialog

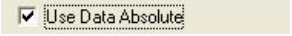


- Move the camera to the second position ‚B’
- Press ‚Add Keyframe’
- As start time for the second Keyframe enter 5.00 s in the following dialog

- Set the slider to the first Keyframe position. The camera jumps to the starting point ‚A’.
- Press again ‚Add Keyframe’
- As starting time for the third Keyframe enter 10.00 s in the following dialog.

The result should be a smooth camera movement between the entered points ‚A’ and ‚B’ in the defined period of 10 seconds.

Note:
Controlling of the position is done relative to the origin coordinates. i.e. if an object with moving pathes is moved manually, the tracks of the Moving Pathes are always moved parallel to the new object coordinates.
If you want to move an object manually without modifying the Moving Path tracks, select the switch ‚Use Data Absolute’:

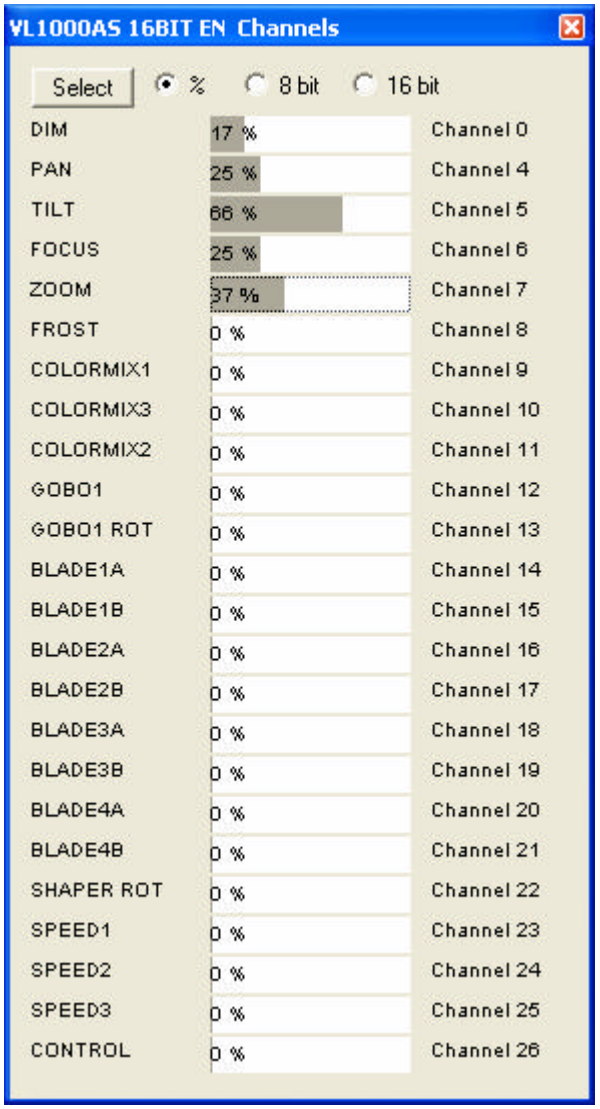


at the end of the property dialog.

8.10 Channel Test Dialog

The Channel Test dialog is used for different tasks:

- The received values can be observed while connected to grandMA console or off-line editor (Desk Monitor Function)
- All the channel values can be stimulated if the application is not in ‚Run' mode.
- The received console values can be shown in ‚Run' mode.


VL1000AS 16BIT EN Channels
Select
%
8 bit
16 bit
DIM 17 % Channel 0
PAN 25 % Channel 4
TILT 66 % Channel 5
FOCUS 25 % Channel 6
ZOOM 37 % Channel 7
FROST 0 % Channel 8
COLORMIX1 0 % Channel 9
COLORMIX3 0 % Channel 10
COLORMIX2 0 % Channel 11
GOBO1 0 % Channel 12
GOBO1 ROT 0 % Channel 13
BLADE1A 0 % Channel 14
BLADE1B 0 % Channel 15
BLADE2A 0 % Channel 16
BLADE2B 0 % Channel 17
BLADE3A 0 % Channel 18
BLADE3B 0 % Channel 19
BLADE4A 0 % Channel 20
BLADE4B 0 % Channel 21
SHAPER ROT 0 % Channel 22
SPEED1 0 % Channel 23
SPEED2 0 % Channel 24
SPEED3 0 % Channel 25
CONTROL 0 % Channel 26

This dialog is not modal i.e. when open, the changed values are used and any results (movements etc.) are immediately viewable in the 3D view if the ‚Play' button is pressed.

You can change the current value Seite: 61 with the corresponding slider.

The slider fields can be edited in various ways:

- Hold down the left mouse button and move the mouse up or downwards. The value will change by small amounts.
- Position the mouse cursor over the shown value. The cursor will change to an arrow (<->) Now the value can be changed in large amounts with depressed mouse button.
  - With a left double click or a right mouse click you can enter the amount numerically.

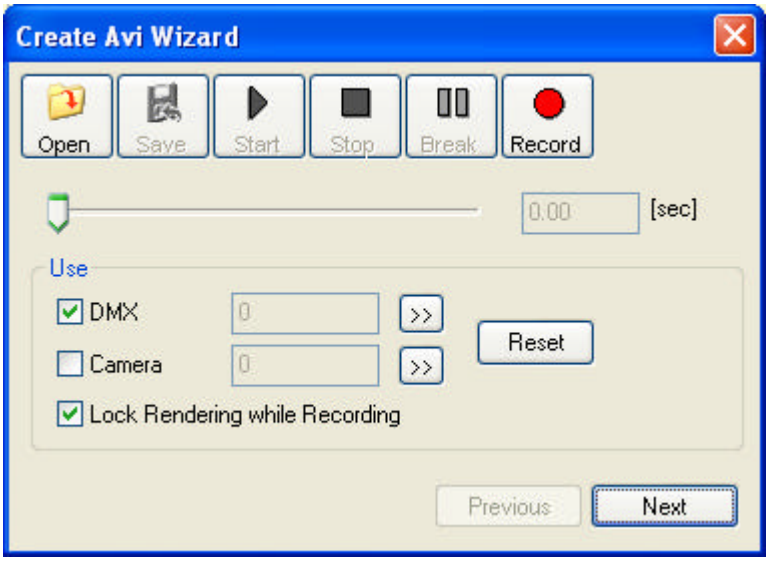
9 Video Creation

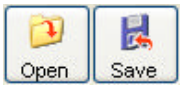
For presentation videos you can record walk-arounds by means of the virtual world you have created. You can store these videos in several file formats and send them to your customers via CD or e-mail or place them on your homepage.

Time Objects:

To visualize processes over time, grandMA 3D works internally with time objects (.TOF files). With this functionality grandMA 3D can store and recall cues, camera movements and all objects movements in the 3D world and afterwards the cues can be replayed.

To create a video, call up the video window and select the menu entry ‘File’ + ‘Create Avi…’.
The following dialog will appear:

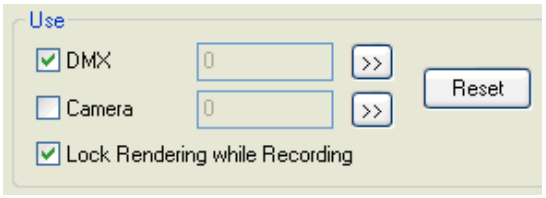




With ‚Open’ and ‚Save’ you can load or save a TOF file.

Buttons to play, stop or pause the recorded .TOF file.

Pressing the ‚Record’ button starts the recording of the .TOF files.



With ‚DMX’ and ‚Camera’ you select what data is recorded.

If the record has dropouts (Video falters) this may be caused by missing DMX values in the .TOC file.
With ‚Lock Rendering while Recording’ the rendering process is not shown in the 3D window. This releases the CPU and the gaps will be avoided.

9.1 Creating an avi file

To record the received data and the camera movements, select these entries

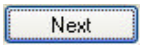
Press the ‘Record’ button and begin with the show.
All DMX value changes and the camera movements are recorded.

You can perform the operations with the desk and walk around in the scene with your camera or switch between different cameras.

Every operation is recorded until the ‘Stop’ button is pressed.

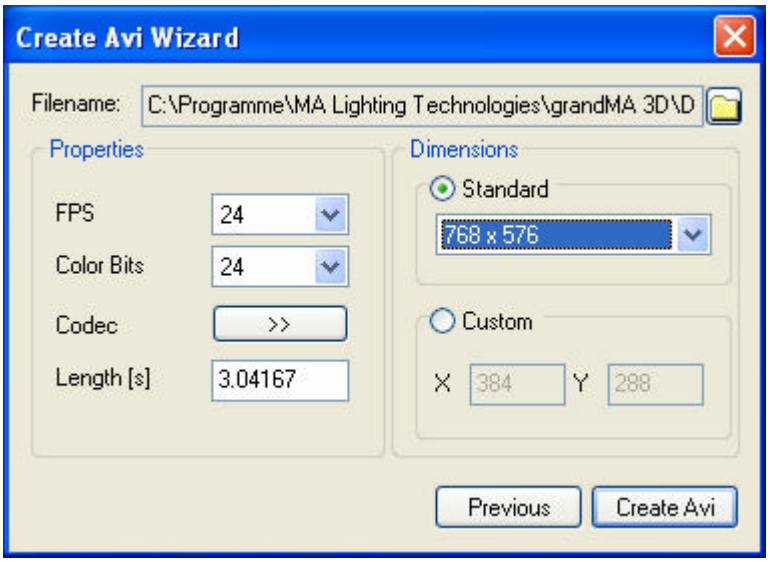
Now you can store the recorded data in a special grandMA 3D format (.TOF) or create a video file with the operations you have recorded:

To store the show in the .TOF format press the ‚Save’ button and enter a filename.



To create an AVI-file press the ‘Next’ button.

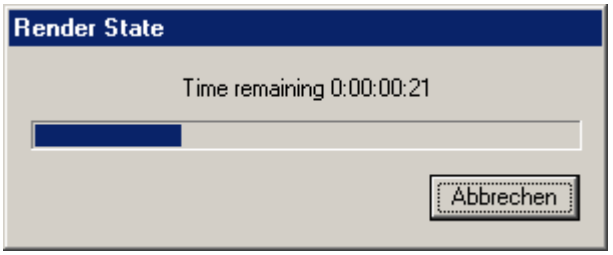
In the following dialog you can select the AVI Parameters:



Generally speaking, you can say that the better the quality of the video file, the longer the rendering process will take.

- **Filename**:
  Opens a dialog to enter a filename.
- **FPS**:
  You can select the frame rate (24 pictures per second corresponds to TV quality)
- **Color Bits:**
  Choose: 8 bit – 256 colors; 16 bit – high color (65536 colors); 32 bit true color (16 million colors)
- **Codec**:
  Choose an option for the compression of the video pictures.
  Press the 'Codec.' button and select for example 'Microsoft Video1' in the window that appears.
- **Dimensions**:
  Enter the dimensions of the AVI-video in X/Y pixels. For example, 768x576 pixels correspond to the German TV standard resolution.

After you pressing 'Create Avi' the program starts the rendering process:

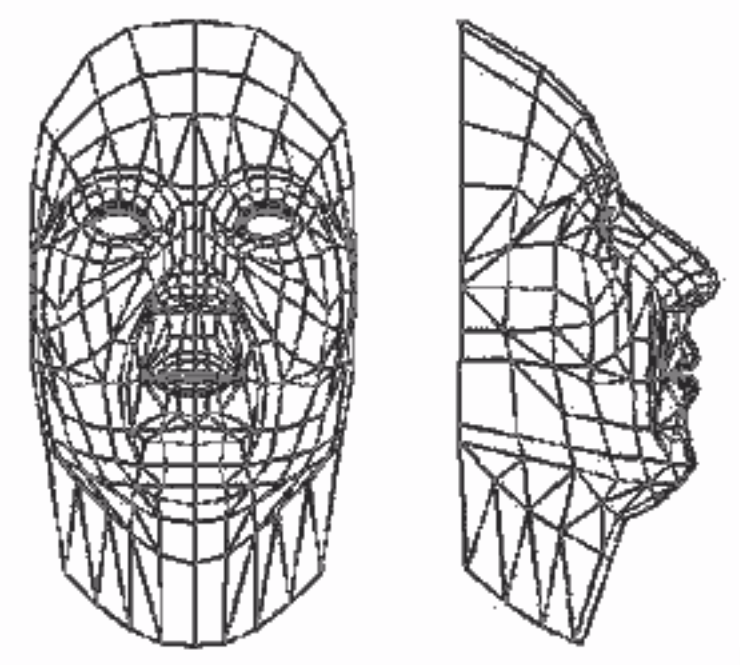


Depending on the complexity and duration of the scene, the rendering process could take from some seconds up to several hours.

During the rendering process, the estimated time is displayed in a window.

10 Basic 3D definitions

For a better understanding of how grandMA 3D works it is useful to know something about the mechanism of 3D visualization.
Let us begin by defining some basic 3D visualization concepts. The goal of this section is to introduce or refresh basic concepts that appear on paper.
Most people think a 3D world is very difficult to simulate. Actually this world consists only of several points called **vertex** or **vertices**. These vertexes are combined with polygons and the results are **faces**.



Picture: human face divided in vertexes

So a vertex is a vector that describes the position of a point in a 3D world.
With these points you can describe the whole 3D world. Faces are also polygons built from vertices. But faces include additional information for example colors, textures etc..
Camera.
A basic aspect of the rendering process is to determine how the three-dimensional objects that form a part of a scene are projected onto a two-dimensional plane that forms the resulting image. This process is very similar to the one that takes place inside a real camera (or our eyes), where a 3D scene is projected onto the plane of a 2D film (retina).
Lights.
Lights can be of different types, each simulating a real light:
Ambient light. The light is produced and spreads in all directions.
Directional light. The rays are parallel to the directional vector of the light beam.
Punctual light. This light strews rays in all directions, but their intensity decreases the farther the distance from the source.
Spotlight These lights, structured in the shape of a cone, are directed according to a vector, which has an origin and a destination. Spotlights decrease in strength the further the distance from the origin.) They are also bounded by the sides and bottom of the cone.
Material Features. Different objects provide varying visual sensations to the human eye, depending on the way light interacts with their surfaces. Characteristics like color, shine, transparency, opacity, and reflectivity alter the way we perceive each material.
The process of simulating the reflective features of a material under the influence of lighting mediums is known as **shading**. This is an important part of the rendering process where color reflected by a material can be calculated as a function of its reflective properties and the properties of the lights in the scene.
Each pixel in the final image is colored by the cumulative effect of the following components of light. The **environmental component** is the color observed when a surface is affected by sources of environment lights. The **diffused component** simulates directional light reflected from a surface with equal intensity in all directions. The intensity is higher when the light incidence is perpendicular to the surface and it reduces in proportion to the angle between the incident light and the surface. More so

as the angle approaches zero. The spotlight **shine component** simulates direct light that bounce from surfaces like mirrors. The environmental reflected component comes from a secondary light that surrounds the object, not from any specific light.

Reflection maps are a way of providing the surface with the reflective properties of a mirror.

Texture. A (2 dimensional) bitmap pasted onto objects or polygons to add realism.

Rendering methods. Rendering methods are related to the way objects are seen on the screen. Different rendering methods produce differing visuals.

Wire frame rendering is the simplest. The objects are represented only by the edges that join their vertices. Hidden lines or surfaces are not removed. This, of course, is the fastest method.

Hidden-line wire frame rendering. This method makes the wire frame look more realistic by removing the surface edges that would not be visible from the chosen viewpoint.

Solid model rendering. Solid modeling fills each surface of the object model with a constant brightness or color, making it appears solid. Surfaces that appear behind one another are eliminated by the rendering process.

Shaded solid model rendering. A shaded solid model adds lighting effects, making the rendering look more realistic. For example, if a light source illuminates the object from one side, that side will appear brighter than the other side.

Rendering improvements:

Aliasing. A form of image distortion associated with signal sampling. A common effect of aliasing is a stair-stepped appearance along diagonal and curved lines. A technique known as **antialiasing** that reduces this effect does exist**.**

When a scene is rendered only the elements that are visible from the camera´s point of view are used for calculations. This reduces the amount of geometrical information that has to be processed, improving the rendering time and memory consumption.

Culling consists of eliminating from a scene all the polygons whose normal point is in the direction opposite to the point-of-view vector. This is to be done just before starting the rendering process.

Clipping eliminates all the geometry that is outside the view volume.

Ray-tracing This technique determines the visibility of surfaces by tracing imaginary rays of light from the viewer's eye (camera) to the objects in the scene. A centre of projection (the viewer's eye) and a window on an arbitrary view plane are selected. The window may be thought of as being divided into a regular grid, whose elements correspond to pixels at the desired resolution. Then, for each pixel in the window, (one or more) eye ray (s) is fired from the centre of projection through the pixel's centre into the scene. The pixel's color is set to that of the object, closest to the camera at the point of intersection.

11 Keyboard Shortcuts

The common shortcuts:

View	Key	Function
3D	TAB	Switch to the next camera
	ESC	Ends Fullscreen Mode and stops the animation
	Enter	Fullscreen Mode
	Ctrl + W	Wireframe Mode
	Ctrl + S	Solid Mode
	Ctrl + T	Textures on / off
	<- ->	Camera rotate
	Ctrl. + <- ->	Camera move parallel
	Ctrl. + F5	Quality High
	Ctrl. + F6	Quality Medium
	Ctrl. + F7	Quality Low
	F 12	Camera rotate 180 degree
2D	TAB	Switch between the views: top, left etc...
	Shift + l.Mouse	Opens Dialog to select objects that are on top of each other
	Ctrl + l. Mouse	Select several objects with the mouse
All	Ctrl + Z	Undo
	Ctrl + A	Redo

Please note, that possible installed drivers for example for 3D graphic cards affect the keyboard shortcuts as well.

Camera movements with the mouse
In the 3D view movements can be made as follows using the mouse:
Actions are released by pressing the middle mouse button in the 3D view.
Camera movements are started or stopped with a click on the middle mouse button.
The movements:

- Normal: Move the active camera in X and Y direction.
- With Shift: Rotation around the X and Z axis.
- With Control: Zoom in the direction of the camera (like a telescopic lenses)

Information about the camera can be found in the status area.

12 FAQ

Should you have any problems with the application, you can refer to the frequently asked questions below:

12.1 Software Questions:

Nr.	Question	Answer
1.	problems with the communication PC <-> desk	Check the TCP/IP settings: - Is a network card installed? - Is the TCP/IP protocol configured? - The TCP/IP subnet mask of the PC must be equal with the subnet mask of the desk for example 255.255.255.0 - The first 3 numbers of the IP address of the PC must be equal to the first three numbers of the desk for example: PC: 192.168.0.10 Desk: 192.168.0.5 - The last number of the IP address must be unique in the complete network. - Please don't use the automatic distribution of IP settings as offered by Windows because these IPs don't fit the requirements.
2.	Two network cards installed – no communication with the console	Select the IP address belonging to the network card attached to the grandMA desk. See: 5.1 Desk Connection Dialog
3.	DirectX Installation	Microsoft DirectX® from version 7 has to be installed on the PC. Windows XP/2000 is delivered with these versions. You can find the actual Direct X version on the Microsoft homepage.
4.	All connected fixtures are centered on the middle of the stage area.	The positions of the connected spots are read from the desk when the desk is connected. Place the fixtures in the 2D or 3D view on their positions. These positions are stored in the desk, and if the application is connected to the desk again, these coordinates are read from the desk.
5.	Cannot find the connected grandMA desk	Check the IP Settings. Make sure, that grandMA 3D is connected as slave. See: 5.1 Desk Connection Dialog
6.	Old Stage setup build with version V 1.1 looks strange	Some objects can not be imported from older versions (objects with sub objects). Please construct these objects new.
7.	Followspot doesn't work	Often the problem off the light position mode is, that the min and max values are the other way round e.g. min 180° max -180°. When you changed this in the 'fixtures type' dialog, positioning works well here. If the spot shines in the opposite direction after pressing the 'Play' button, you have to change the 'INVERT' pan or tilt parameter at the desk. On the desk switch to ‚Full Access'- in the Fixture Layer and change the 'Func.Pan' or 'Func.Tilt' 'INVERT' flag.
8.	my avi renderings are black	Sometimes occurs the problem in GMA 3D with renderings on special ATI graphic boards. The result of the rendered avi shows a black screen. To solve the problem switch off the second graphic port (especially on notebooks). It is a problem that not so expensive graphic boards have only one chip which feeds both ports. If you know actual trouble with that problem, please try out and let us know.

9.	Fixture Library is empty	GrandMA offline and grandma 3D share the folder of the fixture library. In some cases it can happen, that the folders are not congruent for example: 3D: …\MA Lighting Technologies\GlobData\NewFixtures offline: … \MA Lighting Technologies\grandMA\ide0\NEWFIXTURES In that case copy the content of the offline library into the folder shown in grandma 3D.
10.	Disconnecing if a firewall is active	The use of a firewall can cause problems with the communication. To avoid this, the firewall has to be configured as open in both directions for grandma 3D and the offline. The use of the Windows XP included firewall of Service Pack 2 caused no known problems so far.
11.		

12.2 Hardware Questions:

Nr.	Question	Answer
1.	Which 3D shutter glasses are supported?	ELSA REVELATOR shutter glasses and simple red/green glasses have been tested with NVIDIA graphic cards. Please install the current ‚Detonator'driver from ‚NVIDIA.COM'. You can find a list of supported graphic cards and 3D shutter glasses on the ‚Detonator' homepage of NVIDIA.
2.	Can I get the 3D stereo Effect with an LCD or TFT monitor ?	The 3D stereo effect with a shutter glass requires a refresh rate of 120 pictures per second. At the moment these rates can only be reached with tube monitors. But you can use the NVIDIA driver also in a red/green mode and take a simple red/green glass to see how the stereo effect works. Unfortunately the color information is wrong.
3.		

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